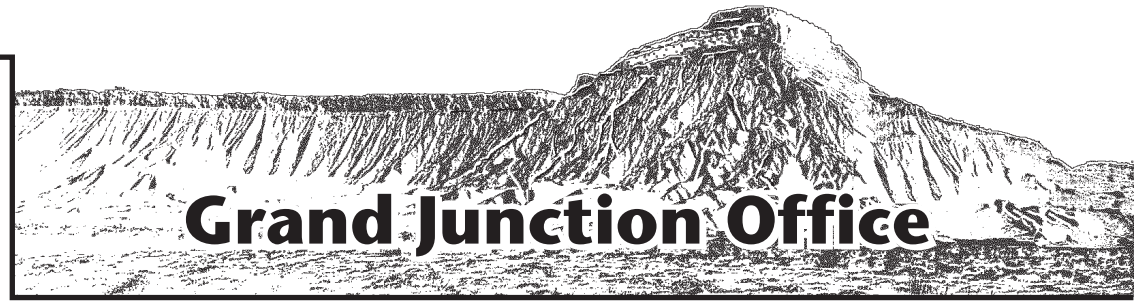
GJO–2003–432–TAC
GJO–PIN 11.6.2

Pinellas Environmental Restoration Project

Sitewide Environmental Monitoring Quarterly Progress Report for the Young-Rainey STAR Center

January through March 2003

April 2003



U.S. Department of Energy

Work Performed Under DOE Contract No. DE–AC13–02GJ79491 for the U.S. Department of Energy

GJO−2003−432−TAC
GJO−PIN 11.6.2

Pinellas Environmental Restoration Project
Sitewide Environmental Monitoring
Quarterly Progress Report
for the
Young - Rainey STAR Center

January through March 2003

April 2003

Prepared by
U.S. Department of Energy
Grand Junction Office
Grand Junction, Colorado

Work Performed Under DOE Contract Number DE−AC13−02GJ79491
Task Order Number ST03−107

Contents

Page

Figures

Tables

Charts

Plates will be provided upon request. Click Plates to request

Plate 1 Sitewide Shallow Surficial Aquifer Contours
Plate 2 Sitewide Deep Surficial Aquifer Contours

Complete appendices will be provided upon request. Click Appendices to request

Appendix A Laboratory Reports—January 2003 Quarterly Results
Appendix B Laboratory Reports for Northeast Site Treatment System—January to March 2003
Appendix C Laboratory Reports for WWNA—January to March 2003
Appendix D Northeast Site Treatment System Historical Data Table

Acronyms and Abbreviations

AST	air stripper tower
bls	below land surface
°C	degrees Celsius
CMS	Corrective Measures Study
CMIP	Corrective Measures Implementation Plan
COPC	contaminant of potential concern
DCA	dichloroethane
DCE	dichloroethene
DOE	U.S. Department of Energy
EA	environmental assessment
EPA	U.S. Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
FONSI	Finding of No Significant Impacts
ft	feet
ft/ft	feet per foot
HSWA	Hazardous and Solid Waste Amendment
ICM	interim corrective measures
IMW	Interim Measures Work (Plan)
IWNF	Industrial Wastewater Neutralization Facility
MCL	maximum contaminant level
MSL	mean sea level
µmhos/cm	micromhos per centimeter
µg/L	micrograms per liter
mg/L	milligrams per liter
mV	millivolt
NAPL	non-aqueous phase liquid
NEPA	National Environmental Policy Act
NTU	Nephelometric Turbidity Units
PCIC	Pinellas County Industrial Council
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
RFA	RCRA Facility Assessment
RPD	relative percent difference
STAR Center	Young – Rainey Science, Technology, and Research Center
STL	Severn Trent Laboratories
SWMU	solid-waste management unit
TCE	trichloroethene
TCOPC	total contaminant of potential concern
VOCs	volatile organic compounds
WWNA	Wastewater Neutralization Area

1.0 Introduction

The Young - Rainey Science, Technology, and Research Center (STAR Center) is a former U.S. Department of Energy (DOE) facility constructed in the mid-1950s in Pinellas County, Florida. The 99-acre STAR Center is located in Largo, Florida, and lies in the northeast quarter of Section 13, Township 30 South, Range 15 East (Figure 1). The STAR Center, while owned by DOE, primarily manufactured neutron generators for nuclear weapons. Other products manufactured at the STAR Center have included radioisotopically powered thermoelectric generators, thermal batteries, specialty capacitors, crystal resonators, neutron detectors, lightning-arrestor connectors, and vacuum-switch tubes. In 1987, the U.S. Environmental Protection Agency (EPA) performed a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) at the site to gather information on potential releases of hazardous materials. In February of 1990, EPA issued a Hazardous and Solid Waste Amendment (HSWA) permit to DOE, enabling DOE to investigate and perform remediation activities in those areas contaminated by hazardous materials resulting from DOE operations. On March 17, 1995, DOE sold the facility to the Pinellas County Industrial Council (PCIC). The sales contract included clauses to ensure continued compliance with Federal, State, and local regulations while DOE remediates the site. On July 1, 1999, the PCIC was disestablished and ownership of the STAR Center changed to the Pinellas County government. In November 2000, the State of Florida received HSWA authorization from the EPA. The Florida Department of Environmental Protection (FDEP) issued a new HSWA Permit to DOE in January 2002.

Administration of DOE activities at the facility is the responsibility of the DOE Idaho Operations Office. Responsibility for environmental restoration activities, conducted under the EPA RCRA Corrective Action Program of 1984, was transferred from DOE's Pinellas Area Office to DOE's Grand Junction Office in October 1997. S.M. Stoller Corporation (Stoller), a prime contractor to the DOE Grand Junction Office, provides technical support to DOE for remediation and closure of all active solid-waste management units (SWMUs) on site.

Ground water monitoring and remediation are also ongoing at the 4.5 Acre Site. The 4.5 Acre Site is a parcel of land that was originally part of the DOE facility but was sold to a private individual. In 1984, ground water contamination was discovered at this site. Currently, DOE leases the site from the land owner and is actively pursuing ground water cleanup. The 4.5 Acre Site is under purview of Florida State regulations enforced by the FDEP. A summary of remediation activities can be found in the *Quarterly Progress Report for the Young – Rainey STAR Center's 4.5 Acre Site*.

The EPA RFA Report and the HSWA permit identified 15 sites at the former DOE facility that may have experienced environmental contamination as a result of past activities. Upon completion of the RCRA Facility Investigation, 11 of the 15 SWMUs were recommended by DOE and approved by EPA Region IV and the FDEP for no further action (DOE 1994). A twelfth site, the Former Pistol Range Site, was remediated in 1993 and recommended by DOE and approved by EPA Region IV and the FDEP for no further action.

Two additional SWMUs, the West Fenceline Site and the Wastewater Neutralization Area/ Building 200 (WWNA/Building 200), were identified after the HSWA permit was issued, bringing the total to 17 SWMUs that have been identified and investigated at the STAR Center. Remediation of the West Fenceline Site was completed in 1997 and DOE recommended, and EPA Region IV and FDEP approved, no further action. A Corrective Measures Study

(CMS)/Corrective Measures Implementation Plan (CMIP) was prepared and submitted in 1997 to EPA Region IV and FDEP to address the contamination at the WWNA/Building 200 Area.

Therefore, there are currently four sites that have contamination in the surficial aquifer ground water at levels in excess of protective standards. These four SWMUs, the Old Drum Storage Site (PIN06), the Industrial Drain Leaks-Building 100 Area (PIN12), the Northeast Site (PIN15), and the WWNA/Building 200 Area (PIN18), are undergoing remediation activities. Two SWMUs, PIN06 and PIN12, are currently being remediated together because of their similar ground water contamination and proximity. These two SWMUs are collectively known as the Building 100 Area. Figure 2 depicts the location of the four SWMUs.

Additional background information relative to each SWMU is briefly described below. This document also serves as the quarterly progress report for each of these four SWMUs. The results of monitoring activities, a summary of the treatment system performance, and a summary of ongoing and projected work are provided in this report.

1.1 Building 100 Area

The Building 100 Area (PIN06 and PIN12) is located in the southeast portion of the STAR Center. The Old Drum Storage Site is the former location of a concrete storage pad equipped with a drain and containment system used to store hazardous waste including dichloromethane (also known as methylene chloride), ignitable liquids, arsenic, and calcium chromate solids (DOE 1987a). Empty drums containing residual waste solvents were also stored in this area (DOE 1987b). The concrete pad was located near the northwest corner of Building 100. The pad was removed in October 1983 in accordance with an FDEP closure permit (DOE 1987a), and a closure report was submitted to the FDEP in August 1986 (DOE 1986). The decommissioning of the pad and the cessation of drum storage effectively removed the potential for a future contaminant source at PIN06.

Building 100 is the largest building at the STAR Center and covers approximately 11 acres. In the past, offices, laboratories, and production facilities for the DOE were housed in the building. SWMU PIN12 consists of the liquid waste drainage system serving Building 100. Four individual drainage systems (sanitary, chemical, health physics, and storm water) were present within the building. In 1989, all four drainage systems were investigated, including verifying the system routing and the condition of underground and above-ground piping and ancillary equipment (EMC 1989). As a result of this investigation, the health physics and chemical drainage systems were flushed, grouted, and abandoned (DOE 1997). Some of the chemical drain lines were replaced by an above-ground system currently used by tenants of the building.

A CMS and CMIP were completed and approved for the Building 100 Area because volatile organic compounds (VOCs) concentrations measured in ground water at the Old Drum Storage Site (PIN06) and one monitoring well located at the northwest corner of Building 100 (PIN12) exceeded the Safe Drinking Water Act and FDEP maximum contaminant levels (MCLs). Subsequent investigations revealed elevated VOCs concentrations under Building 100 and downgradient to the southeast as well. On August 15, 2000, EPA approved the Building 100 CMIP Addendum. FDEP approved this same document on November 15, 1999.

Commencing in May 2001, DOE began an analysis of the potential remediation strategies for the three Building 100 Area tasks: plume control, source treatment, and dissolved phase treatment.

The *Building 100 Area Remediation Technology Screening Report* (DOE 2001) was prepared and assembled a list of remediation technologies, categorized them into the remediation tasks, and conducted an initial screening of the technologies. This initial screening eliminated the technologies that obviously would not work and recommended technologies that should be retained for detailed evaluation at a later time. The final technology for each task will be identified at a later date.

The *Building 100 Area Plume Control Technology Selection Report*, prepared in February 2002, conducted a detailed evaluation of five plume control technologies and recommended a technology that should be implemented for plume control at the Building 100 Area. Based on this evaluation, enhanced bioremediation was recommended to control the contaminant plume.

1.2 Northeast Site

In the late 1960s, before construction of the East Pond, drums of waste and construction debris were disposed of in the swampy area of the Northeast Site. The East Pond was excavated in 1968 as a borrow pit. In 1986, an expansion of the East Pond was initiated to create additional storm-water retention capacity. Excavation activities ceased when contamination was detected directly west of the East Pond. EPA identified the Northeast Site as a SWMU. An Interim Corrective Measures (ICM) Study was developed and submitted to EPA and approval of this document was received in October 1991. An interim ground water recovery system for the Northeast Site was installed, and operation commenced in January 1992. The implementation of this ICM system at this site is consistent with the regulatory goals of the EPA's RCRA Corrective Actions (Subpart S).

The ICM system, as initially installed, consisted of four recovery wells equipped with pneumatic recovery pumps, a holding tank, centrifugal transfer pumps, and approximately 2,500 feet (ft) of transfer and secondary containment piping. During 1993, DOE proposed a reconfigured system for the site consisting of four shallow and three deep recovery wells. After EPA approved the system upgrade, the system was reconfigured and became operational on March 1, 1994.

Between August and October 1995, after EPA and FDEP approval, a portion of the Northeast Site was excavated to remove debris and other materials that could inhibit future corrective measures. Location of the areas of excavation was based primarily on the results of a geophysical survey and knowledge of existing utility locations. Detailed descriptions of the debris removal activities were submitted to EPA and FDEP as part of the *Northeast Site Interim Measures Quarterly Progress Report* (DOE 1996).

In 1996, DOE submitted a CMIP to EPA Region IV and FDEP. This plan was approved by both regulatory agencies in 1997. As part of the Northeast Site CMS and CMIP, a pump-and-treat system in conjunction with a subsurface hydrogeologic barrier wall to prevent migration of the contaminant plume was identified as the best available technology. A pretreatment system for iron removal, an air stripper unit, and a tank for holding treated ground water before discharge to the Pinellas County Publicly Owned Treatment Works were recommended. The treatment system was constructed in early 1997 and became operational by July 1997 with seven Northeast Site recovery wells and two Building 100 recovery wells pumping to the system influent tank. Subsequently, several additional recovery wells were installed, and some of the old recovery wells were abandoned.

During 1997, anaerobic bioremediation and rotary steam stripping pilot tests were conducted in the northern and southern portions of the Northeast site, respectively. These tests were designed by an Innovative Treatment Remediation Demonstration group of regulatory and industry members to provide remedial options at the STAR Center. At the conclusion of the field tests in July 1997, pump-and-treat technology resumed at the Northeast Site.

An *Interim Measures Work (IMW) Plan for Remediation of Non-Aqueous Phase Liquids at the Northeast Site* was submitted to FDEP in late November 2001. The purpose of this document was to present the plan for the interim measure to remediate non-aqueous phase liquids (NAPLs) at the Northeast Site. An ICM is warranted because it supports the long-term corrective action to remediate the dissolved phase contamination in the surficial aquifer to FDEP drinking water MCLs. Without this measure, NAPLs will continue to act as a source of dissolved contamination, resulting in contaminant concentrations in ground water well above the MCLs. FDEP approved this document on January 10, 2002.

Concurrent with the preparation of the IMW Plan, an Environmental Checklist recommending a Categorical Exclusion was prepared and approved by DOE on December 19, 2001. The Categorical Exclusion pathway was approved based upon the fact that the NAPL remediation of Area A is a small-scale, short-term cleanup action and the siting, construction, and operation of treatment facilities are temporary and pilot-scale in size.

A National Environmental Policy Act (NEPA) Action Review was conducted for the interim measure source removal action at Area B in October of 2002. A summary of the review concluded that Area B remediation would impact an area of approximately 38,000 square feet. The footprint of the above ground treatment system would be about 80 ft by 80 ft, and an estimated 84,000 gallons per day of ground water would be processed over a 24-week period of operation. The proposed interim measure, although not specifically identified in the 1995 *Environmental Assessment of Corrective Action at the Northeast Site* (EA), was determined to be within the scope of the proposed actions. The remedial activity would occur within the same physical boundaries and address the same contaminants identified in the EA, but in a more concentrated form. Because the EA provided for "design modifications to reflect technological advances or site-specific conditions," it was determined that the NAPL remediation of Area B was within the scope of the existing EA. However, this flexibility was not mentioned in the Finding of No Significant Impacts (FONSI) document signed in May 1995. Therefore, it was determined that the appropriate action under NEPA would require an amendment to the FONSI to include the broader scope of activities from the EA and any additional impacts from the NAPL removal action. The FONSI was amended, reviewed by the DOE-Idaho NEPA Planning Board, and approved by the DOE−GJO NEPA Compliance Officer on February 24, 2003.

1.3 WWNA/Building 200 Area

The WWNA/Building 200 Area includes the active Industrial Wastewater Neutralization Facility (IWNF), the area around Building 200, and the area south of the neutralization facility. The IWNF refers to the physical treatment facility that currently receives sanitary and industrial wastewater and has been in operation since 1957.

A CMS Report and CMIP were completed in 1997 for this SWMU because vinyl chloride, trichloroethene (TCE), and arsenic were detected in surficial aquifer ground water at concentrations above Federal and State MCLs. The recommended remediation alternative for the

WWNA/Building 200 Area was ground water recovery with the Building 100 Area wells and an additional recovery well located in the WWNA. The CMIP recommended that recovered water from the additional well be discharged directly to the IWNF and that the recovery well in the WWNA/Building 200 Area will withdraw surficial aquifer ground water directly from the arsenic plume and thereby reduce the contaminant mass and prevent contaminant migration.

FDEP response to the CMS/CMIP concerning arsenic soil contamination in the upper 2 ft suggested that a treatment technology, air sparging, was eliminated too early. DOE then proposed a multi-phased Interim Action that included operating the recovery well for 6 months, then pulsing the system, as well as performing geochemical analyses and leaching studies of the site. On January 21, 1999, FDEP approved the proposed interim remedial action.

Additionally, EPA Region IV also approved the interim remedial action and concurred with the FDEP's position regarding the arsenic contamination. EPA also requested an addendum or modification to the CMIP that addresses DOE's final selection of the remediation technology and a timeline for the completion of these activities.

In early June 1999, the WWNA recovery well commenced operation. All arsenic concentrations from the WWNA recovery well, PIN18−RW01, were below the STAR Center's daily maximum discharge standard for arsenic in wastewater of 0.20 milligrams per liter (mg/L) until shutdown.

Additional details concerning the impacts of ground water extraction are reported in the WWNA/Building 200 Area CMIP Addendum (DOE 2000b). Modifications to the recovery of ground water were proposed based on data collected through November 1999 and consisted of the installation of two new recovery wells screened at shallow intervals. The CMIP Addendum was submitted to the regulators and approved by FDEP and EPA. A Statement of Basis (DOE 2000a) was issued by DOE in late September 2000. This document provides a summary of environmental investigations and proposed cleanup alternatives for the WWNA/Building 200 Area. Current activities at the WWNA include ground water extraction from two recovery wells, PIN18−RW02 and −RW03, that discharge to the STAR Center's wastewater system. Table 1 depicts the results of the analysis of arsenic in ground water that is being recovered from these two wells.

1.4 Site Update

In situ thermal remediation operations at the Northeast Site NAPL Area A began on September 26, 2002, and ceased on February 28, 2003. The initial confirmatory soil and ground water sampling event commenced in late March and will continue into mid-April 2003. Results of the confirmatory soil and ground water sampling will be presented in the next quarterly report. Further discussion of the NAPL remediation at Area A can be found in the *Interim Measures Progress Report for Remediation of Non-Aqueous Phase Liquids at the Northeast Site, January − March 2003* (DOE 2003).

Additional plume delineation at the Northeast Site occurred in late January with the installation of five new ground water monitoring wells, PIN15−0568 through –0572. The following table provides well construction information on these five monitoring wells.

New Northeast Site Monitoring Well Construction Information

Location ID	Depth of Well (ft bls)	Well Diameter (Inches)	Screen Interval (ft)
PIN15–0568	20	1.0	10 – 20
PIN15–0569	30	1.0	20 – 30
PIN15–0570	30	1.0	20 – 30
PIN15–0571	20	1.0	10 – 20
PIN15–0572	30	1.0	20 – 30

bls – below land surface

Safety and Ecology, Inc., the vendor chosen to implement the in situ enhanced bioremediation to control the plume of dissolved contaminants at the Building 100 Area, conducted field activities to inject the enhancing agent Hydrogen Release Compound® at 27 locations around three ground water monitoring wells in mid-March 2003. This task will continue as a year-long pilot test to evaluate the efficiency of the technology. Implementation of full-scale plume control will follow.

In preparation for the enhanced bioremediation pilot test at the Building 100 Area, ground water samples for microbial analysis were collected as a special sampling event that occurred during the routine quarterly sampling activities in early January. These samples were collected from pilot test wells PIN12−0514, PIN12−0526, and PIN12−S73C to determine if the dehalococcoides ethenogenes microorganism is present. Microbial Insights, a microbiology lab in Tennessee, conducted the analysis. The dehalococcoides ethenogenes microorganism is known to cause the dechlorination of the chlorinated ethenes, such as TCE, dichloroethene (DCE), and vinyl chloride. The results indicated that the microorganism was present in wells 0514 and 0526 at moderate abundance, but was below the detection limit in well S73C. It is likely that injection of the amendment chemical will increase the abundance of this organism to above the detection limit in well S73C. This analysis will be conducted again later in the pilot test to evaluate enhancement of biological activity.

1.5 Quarterly Site Activities

Stoller personnel conducted the following tasks at the STAR Center to fulfill the requirements of the scope of work for quarterly sampling:

- Obtained water-level measurements from all accessible monitoring wells, recovery wells, and ponds on January 6−7, 2003.

- Conducted the quarterly sampling event in January 2003. This included collecting water samples from 80 monitoring and recovery wells. VOC samples were collected at 53 wells. Sampling for arsenic was conducted at 69 wells. Chromium sampling was conducted at 11 WWNA wells.

- Reported the results of quarterly sampling events (this document).

2.0 Water-Level Elevations

2.1 Work Conducted and Methods

Within a 31-hour period on January 6−7, 2003, depth-to-water measurements were taken at all accessible monitoring wells and extraction wells at the STAR Center. The water levels were measured with an electronic water-level indicator with the exception of some of the ponds, which are measured with gauging stations. Ground water and surface-water elevations are listed in Table 2.

2.2 Ground Water Flow

Ground water and surface-water elevations were used to construct sitewide ground water contour maps of the shallow and deep surficial aquifers (Plates 1 and 2, respectively). Individual contour maps were also constructed for the shallow and deep surficial aquifers at the Northeast Site and the Building 100 Area (Figure 3 through Figure 6, respectively). All data points except monitoring well PIN12−S55D and the Southwest Pond (PIN23−SW01) were honored when constructing the interpretive contours. Monitoring well PIN12−S55D has degraded and not provided a representative water level for some time. It will be dropped from future water-level events. The surface-water elevation in the Southwest Pond was measured inaccurately. Its elevation should be the same as the South Pond.

The water levels throughout the STAR Center indicate that the water table is highest in the north-central parts of the site (Plates 1 and 2). As ground water flows from this recharge area, it essentially disperses to the west, south, and east. These flow patterns are similar for both the shallow and deep surficial aquifers, and are consistent with previously observed flow patterns.

Along the northern boundary of the Northeast Site, the contours near the slurry wall indicate that the wall continues to be a significant barrier to ground water flow. As seen on Figure 4, there is a differential of more than 7 ft between the downgradient and upgradient sides of the wall as measured in monitoring wells PIN15−M24D and −M33D. This differential is slightly greater than the historical range of about 2 to 5 ft. This increased differential is due, in part, to increased ground water withdrawals from the NAPL treatment area. The flow patterns suggest that only a minimal amount of ground water recharge to the deep surficial aquifer is derived from the pond. Otherwise, the differential between these two wells would be smaller and the ground water gradient would be steeper near the pond, indicating recharge to the ground water system. Water-table elevations immediately around the East Pond, however, indicate that the pond was slightly recharging the shallow surficial aquifer in January 2003 (Figure 3).

In the shallow surficial aquifer just south of the Northeast Site, the hydraulic gradient was approximately 0.002 feet per foot (ft/ft). Using Darcy's Law, along with approximations of 1 ft/day for hydraulic conductivity and 0.3 for effective porosity, ground water in the southern part of the site is estimated to move about 3 ft/year toward the north-northeast (i.e., toward the on-site extraction wells) under conditions influenced by pumping. This velocity is less than those estimated the previous two quarters (17 and 22 ft/year). The decrease in estimated ground water velocity is most likely due to increased recharge to the shallow surficial aquifer from high rainfall in December 2002 (over 14 inches at the Tampa International Airport in

December 2002). In the deep surficial aquifer, the radius of influence from the recovery wells is interpreted to extend roughly 40 ft south of the south fence (Figure 4).

In the south-central part of the STAR Center, surficial aquifer flow is influenced by ground water withdrawals from recovery wells PIN12−RW01 and −RW02 in the northwest corner of Building 100 (Figure 6), and withdrawals from recovery wells PIN18−RW02 and −RW03 at the WWNA. The shallow water table beneath Building 100 was relatively flat in April 2002, but generally flowed to the southeast in January 2003. Shallow ground water at the WWNA flows to the southeast, except where affected by recovery well withdrawals. The hydraulic gradient beyond the influence of pumping at the Building 100 Area was about 0.003 ft/ft. Using the approximations mentioned above, ground water flow velocity in these areas is estimated to be less than 4 ft/year.

Water-level elevations in the three wells screened in the upper part of the Floridan aquifer are presented in Table 3. The elevations in these wells indicate that the potentiometric surface of the Floridan aquifer at the site is essentially flat.

A downward vertical hydraulic differential of approximately 6.2 ft existed between the surficial aquifer wells and Floridan aquifer wells at the Northeast Site. Table 4 illustrates the vertical hydraulic differential. This differential is consistent with the historical range of 5 to 9 ft.

Surface-water elevations were recorded from the East, South, and Southwest Ponds at the site and are presented in Table 5. The ponds are hydraulically connected to the shallow surficial aquifer system. The South and Southwest Ponds elevations have always been essentially the same, therefore, the reading for the Southwest Pond is considered questionable.

3.0 Ground Water Sampling and Analytical Results

3.1 Work Performed

During quarterly sampling in January 2003, ground water samples were collected from 80 monitoring and recovery wells. Fifty-three samples were analyzed for VOCs using EPA Method 8021. Sixty-nine samples were analyzed for arsenic and 11 samples were analyzed for chromium using EPA Method 6010. Laboratory reports are provided in Appendix A.

During the period of January 1 to March 31, 2003, the remediation system influent and effluent at the Northeast Site, as well as selected recovery wells at the Northeast Site, were also sampled. Analytical results for remediation system VOCs, iron, and hardness (as $CaCO_3$) sampling are provided in Appendix B. Laboratory reports for the WWNA analyses are provided in Appendix C.

All samples were collected in accordance with the Stoller *Sampling Procedures for the Young - Rainey STAR Center* (DOE 2002), using FDEP procedures. All samples collected were submitted to Severn Trent Laboratories (STL) for analysis. STL is accredited by the Florida Department of Health in accordance with the National Environmental Laboratory Accreditation Conference, certification number E84282. The majority of monitoring wells were micropurged using a dedicated bladder pump, and sampling was performed when the field measurements stabililized. The remaining wells were conventionally purged with a peristaltic pump or a 2-inch diameter

stainless-steel submersible pump; purging was considered complete once field measurements had stabilized. Extraction wells were sampled using their associated flowlines with dedicated sampling ports. Table 6 lists field measurements of pH, specific conductance, dissolved oxygen, oxidation-reduction potential, turbidity, and temperature recorded at the time the samples were collected. Measurements were made with a flow cell and a multiparameter instrument.

3.2 Analytical Results

3.2.1 Northeast Site (PIN15)

Concentrations of contaminants of potential concern (COPC) in samples collected from wells at the Northeast Site (PIN15) are included in Table 7, which shows the previous four quarters of data for comparison purposes. Figure 7 shows the total COPCs (TCOPCs) concentrations.

No COPCs were detected in the five monitoring wells listed below:

PIN15–0530	PIN15–M27S	PIN15–M31S	PIN15–M32D	PIN15–M32S

The 15 monitoring and recovery wells listed below contained detectable COPCs:

PIN15–0535	PIN15–0538	PIN15–M31D	PIN15–RW12	PIN15–RW15
PIN15–0536	PIN15–0559	PIN15–RW03	PIN15–RW13	PIN15–RW16
PIN15–0537	PIN15–M27D	PIN15–RW06	PIN15–RW14	PIN15–RW17

TCOPCs concentrations ranged from below detection limit to 219,000 micrograms per liter (µg/L). Well PIN15−RW03 contained the highest TCOPC value, and the COPC compound detected at the highest concentration was methylene chloride at 130,000 µg/L.

Concentrations of arsenic from ground water samples collected in 17 monitoring wells at the Northeast Site are reported in Table 8 and show that arsenic was detected at two monitoring wells, PIN15−M32S and –M35D, at concentrations of 0.016 and 0.045 mg/L, respectively.

3.2.2 Building 100 Area (PIN06, PIN09, PIN10, PIN12, and PIN21)

TCOPCs concentrations in samples collected from wells sampled at the Building 100 Area are included in Table 9, which also shows the previous four quarters of data for comparison purposes. Figure 8 shows the TCOPCs concentrations.

No COPCs were detected in the 12 monitoring wells listed below:

PIN12–S68B	PIN12–S69D	PIN12–S73D	PIN21–0504
PIN12–S69B	PIN12–S72B	PIN21–0502	PIN21–0505
PIN12–S69C	PIN12–S73B	PIN21–0503	PIN21–0512

Samples from the 19 monitoring wells listed below contained COPCs at detectable levels. They are:

PIN12–0513	PIN12–0526	PIN12–S68C	PIN12–S70D	PIN12–S72C
PIN12–0514	PIN12–S67B	PIN12–S68D	PIN12–S71B	PIN12–S72D
PIN12–0524	PIN12–S67C	PIN12–S70B	PIN12–S71C	PIN12–S73C
PIN12–0525	PIN12–S67D	PIN12–S70C	PIN12–S71D	

TCOPCs concentrations ranged from below detection limits to 9,010 µg/L. The COPC compound detected at the highest concentration was cis-1,2-DCE at 8,200 µg/L in PIN12−0524.

Concentrations of arsenic from ground water samples collected in 42 monitoring wells at the Building 100 Area are reported in Table 8 and show that arsenic was detected at nine monitoring wells listed below:

PIN06–0500	PIN12–0525	PIN12–S33C
PIN06–0501	PIN12–S31B	PIN12–S35B
PIN09–0500	PIN12–S32B	PIN12–S68B

Monitoring well PIN12−S68B contained the highest arsenic value of 0.11 mg/L.

3.2.3 Wastewater Neutralization Area (PIN18)

No volatile COPCs were detected in the two monitoring wells listed below (these were the only PIN18 samples analyzed for VOCs).

PIN18–RW02 PIN18–RW03

Arsenic samples were collected from 10 wells. Concentrations of COPCs from quarterly sampling are listed in Table 10 and TCOPCs (arsenic and vinyl chloride) are shown in Figure 9. The highest concentration of arsenic detected was 380 µg/L in PIN18−0501 (note that the units for arsenic have changed from mg/L to µg/L so that TCOPCs for this area could be calculated using consistent units).

Concentrations of chromium from ground water samples collected in 11 monitoring wells at the WWNA are reported in Table 8 and show that chromium was detected at two monitoring wells, PIN18−0514 and –0515, at concentrations of 0.025 and 0.011 mg/L, respectively.

3.3 Quality Assurance/Quality Control

Stoller checked the analytical results from STL for quality assurance/quality control (QA/QC) through duplicate samples and trip blanks. Detected analytes for VOCs, arsenic, and chromium analyses for each duplicate sample are listed in Table 11. The duplicate sample results were compared and the relative percent differences (RPDs) between the results were calculated. There were three duplicates analyzed for VOCs, four duplicates analyzed for arsenic metals, and one duplicate analyzed for chromium. A total of 116 duplicate analyses for individual analytes were performed. Only two of the individual analyses failed. Cis- and trans-1,2-DCE in PIN12−S73C did not meet the guidance criterion that the RPDs results should be within the range of

±30 percent when the concentration is greater than 5 times the detection limit. The failure rate was less than 2 percent. All other data passed QA/QC criteria at a Class A level, indicating that all data may be used for quantitative and qualitative purposes.

Duplicate samples should be collected at a frequency of one duplicate for every 20 or fewer samples. There were 53 ground water samples analyzed for VOCs, with four duplicate VOC samples collected. There were 69 ground water samples analyzed for arsenic, with four duplicate samples. There were 11 ground water samples analyzed for chromium, with one duplicate sample collected. The duplicate requirements for VOCs, arsenic, and chromium were met.

During the quarterly sampling event, four trip blanks were submitted for analysis. No analytes were detected above the reporting limit.

4.0 Treatment System and Recovery Well Performance

4.1 Northeast Site and Building 100

The Northeast Site ground water treatment system was operational from January 1 through March 31, 2003. However, during this quarter, some system downtime was experienced. During the period of January 2 through 7, the Northeast Site Treatment System experienced three failures due to high water levels in the effluent tank. Subsequent investigation revealed failed check valves on the effluent tank discharge line that were allowing water to flow back into the tank and fill it under non-pumping conditions. The failed valves were replaced the week of January 7; there have been no further unplanned shutdowns since the valves were replaced.

On the morning of February 5, the Treatment System was shutdown for replacement of the flowmeter on the surge tank discharge. Previously, a problem was observed with the meter that was discovered to be a result of rainwater leaking into the meter. The leaky meter was replaced with a new meter on February 5 and the Treatment System was restarted.

Table 12 provides a summary of analytical results for samples collected at the Northeast Site treatment system during this quarter. FeRemede® continues to be utilized to effectively control the deposition of iron and hardness salts. The application of sodium hypochlorite as a microbiocide has continued to successfully control biological growth in the air stripper tower (AST).

From January 1 through March 31, 2003, 2,183,650 gallons of ground water were recovered from the Northeast Site and Building 100 recovery wells. The volume of recovered ground water treated by the Northeast Site treatment system since its startup in June 1997 through March 2003 is presented in Chart 1. Charts 2, 3, and 4 present the monthly volume of ground water recovered during January through March 2003 from the Northeast Site recovery wells.

The monthly ground water recovery from January through March 2003 for the Building 100 recovery wells is presented in Charts 5, 6, and 7, respectively.

Total percent on-time for the Northeast Site AST is illustrated in Chart 8. On-time for the AST for this quarter was affected by the above-described outages. Historical summary of ground water at the Northeast Site and Building 100 is shown in Appendix D as Table D−1.

Table 13 presents the calculated mass of selected analytes recovered with the Northeast Site treatment system for each month of this reporting period. These monthly results are based on the measured system influent concentration and influent ground water flow.

4.2 Wastewater Neutralization Area

The two recovery wells (PIN18−RW02 and −RW03) continue to each produce approximately 2.5 gallons per minute continuously with an electrical submersible pump set in each well at approximately 12 ft below land surface (bls). The effluent ground water from each well is combined into a common header pipe and discharged into the industrial wastewater-receiving tank at the IWNF. During this quarter, 655,646 gallons of ground water were recovered from the subsurface. Since start-up on February 26, 2001, both wells have operated continuously.

5.0 Current and Projected Work

5.1 Summary

Work for January through March 2003 included sampling of ground water monitoring wells and recovery wells for water quality and water levels. The treatment system and recovery wells were operated during the entire quarter, except for some short periods of downtime that were described in Section 4.1.

5.2 Project Work Conducted

The Northeast Site treatment system influent and effluent were sampled during the quarter. Treatment system effluent samples were analyzed for VOCs and the effluent discharge volume was recorded to comply with the Pinellas County wastewater permit. In the effluent samples, all volatile organic aromatic concentrations were under the Pinellas County regulatory limit of 50 µg/L.

Maintenance performed during the quarter consisted of routine preventative maintenance and the replacement of failed check valves and a leaky flowmeter.

6.0 Conclusions

The following conclusions are based on the quarterly sampling conducted in January 2003.

- A decrease in the surficial ground water flow rate was observed just south of the Northeast Site, although the flow direction remained the same as previous quarters. This decrease was probably due to increased recharge from rainfall in December 2002. In other areas of the site, flow rates and directions remained consistent with historical observations.

- The highest concentration of COPCs was detected at the Northeast Site in well PIN15−RW03.

- The operation of the Northeast Site recovery wells appears to be controlling plume movement along the southern perimeter of the Northeast Site.

- Monitoring of ground water quality data and in situ thermal readings indicate the Northeast Site Area A NAPL remediation system operated within design and no loss of steam or vapor was observed.

7.0 Tasks to be Performed Next Quarter

The following tasks are expected to be conducted during the next quarterly period (April through June 2003):

- Quarterly sampling activities will occur in April 2003.

- Monthly and mid-monthly sampling and analysis of ground water will continue in order to provide compliance and system operations data.

- Treatment system optimization will continue as new issues develop.

- Utilization of the dedicated bladder pumps for quarterly sampling using the micropurging technique will continue.

- Assessment of Northeast Site Area A NAPL remediation effectiveness that began in March will extend through late July 2003.

8.0 References

EMC, 1989. *Conceptual Design Report to Upgrade the Existing Drain System, U.S. Department of Energy, Pinellas Plant*, prepared by EMC Engineers, Inc., for General Electric Company, Neutron Devices Department, Pinellas Plant, Pinellas County, Largo, Florida, June.

U.S. Department of Energy, 1986. *Old Drum Storage Pad Closure Certification*, U.S. Department of Energy, Pinellas Plant, Largo, Florida.

———, 1987a. *Draft Environmental Survey Sampling and Analysis Plan for the Pinellas Plant, Largo, Florida*, U.S. Department of Energy, Office of Environmental Audit, July 24.

———, 1987b. *Phase 1. Installation Assessment Pinellas Plant*, Draft, Comprehensive Environmental Assessment and Response Program, U.S. Department of Energy, Albuquerque Field Office, Albuquerque, New Mexico, June.

———, 1994. *Statement of Basis for Twelve Solid Waste Management Units Recommended for No Further Action*, U.S. Department of Energy, Pinellas Plant, Largo, Florida, January.

U.S. Department of Energy, 1996. *Northeast Site Interim Measures Quarterly Progress Report*, U.S. Department of Energy, January.

———, 1997. *Pinellas Plant Environmental Baseline Report*, prepared by Lockheed Martin Specialty Components, Inc. for U.S. Department of Energy, Pinellas Area Office, June.

———, 2000a. *Statement of Basis Wastewater Neutralization Area/Building 200 Area*, MAC−PIN 12.3.1, prepared by MACTEC−ERS, Grand Junction, Colorado, for U.S. Department of Energy, September.

———, 2000b. *Wastewater Neutralization Area/Building 200 Area Corrective Measures Implementation Plan Addendum*, prepared by MACTEC−ERS, Grand Junction, Colorado for U.S. Department of Energy, January.

———, 2001. *Building 100 Area Remediation Technology Screening Report*, GJO−2001−248−TAR, U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, August.

———, 2002. *Sampling Procedures for the Young − Rainey STAR Center,* GJO−2001−206−TAR, MAC−PIN 2.4-1, prepared by U.S. Department of Energy, Grand Junction Office, Grand Junction, Colorado, July.

———, 2003. *Interim Measures Progress Report for Remediation of Non-Aqueous Phase Liquids at the Northeast Site, January − March 2003*, prepared by U.S. Department of Energy Grand Junction Office, Grand Junction, Colorado, April.

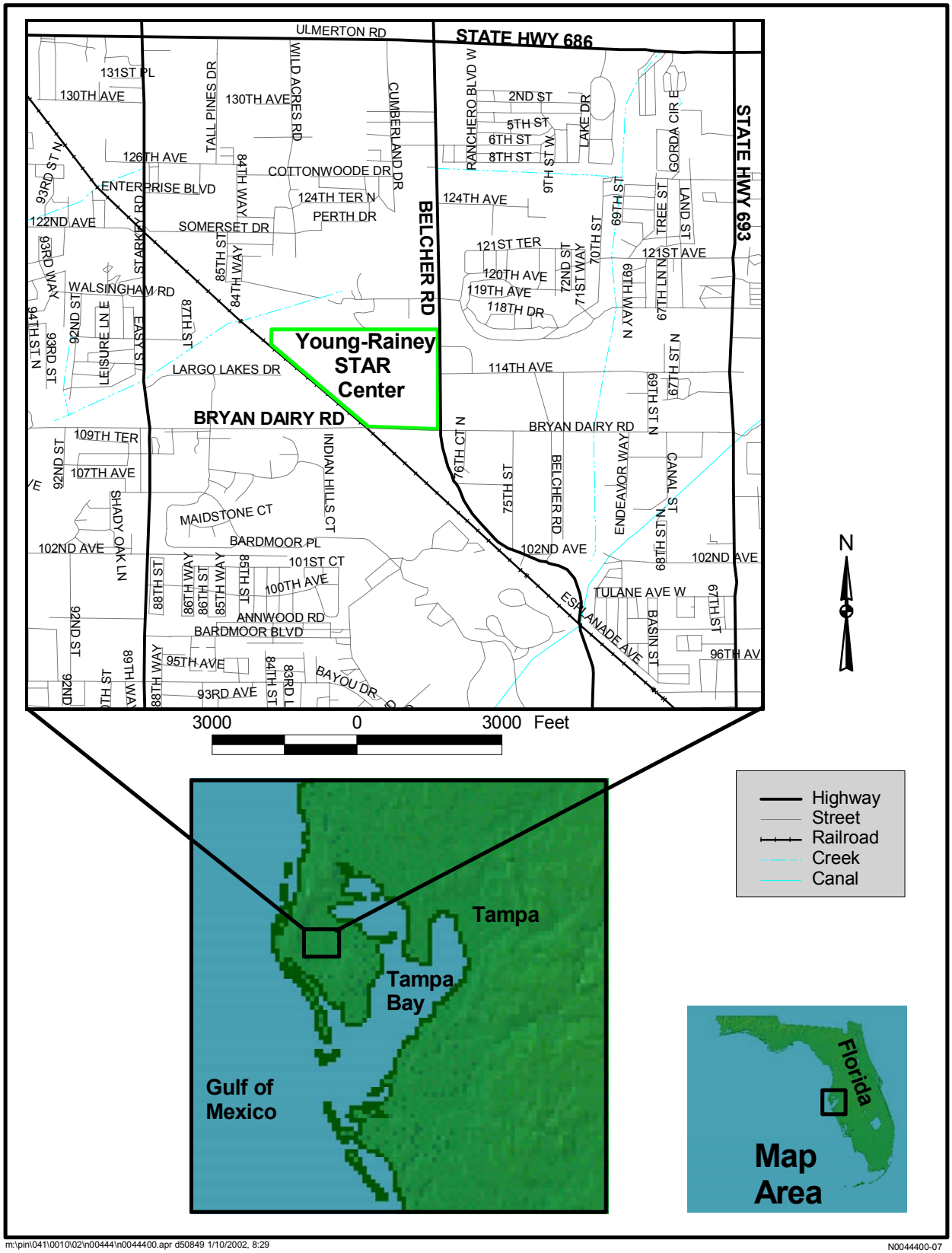


Figure 1. Young - Rainey STAR Center Location

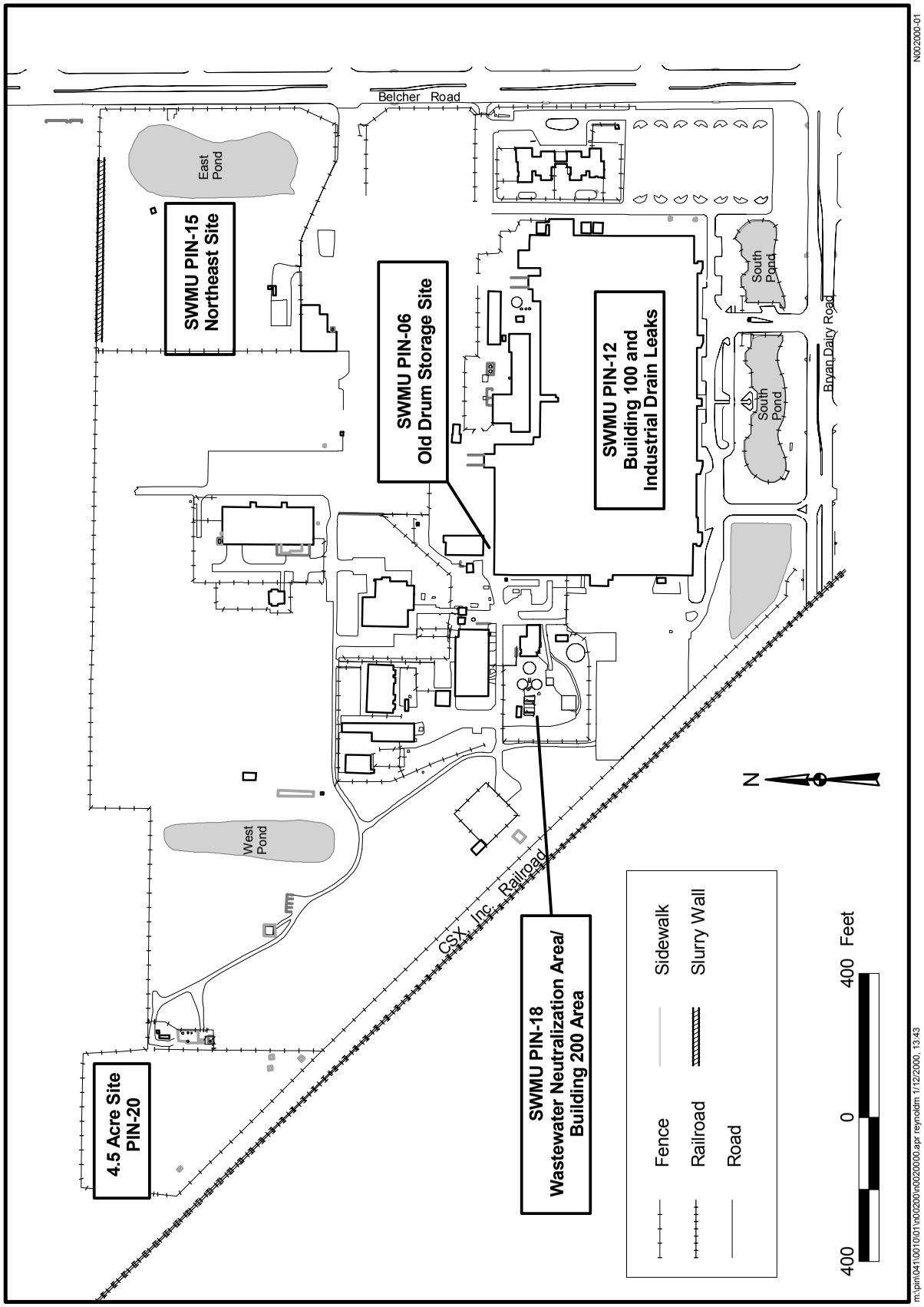


Figure 2. Location of STAR Center Solid Waste Management Units (SWMUs)

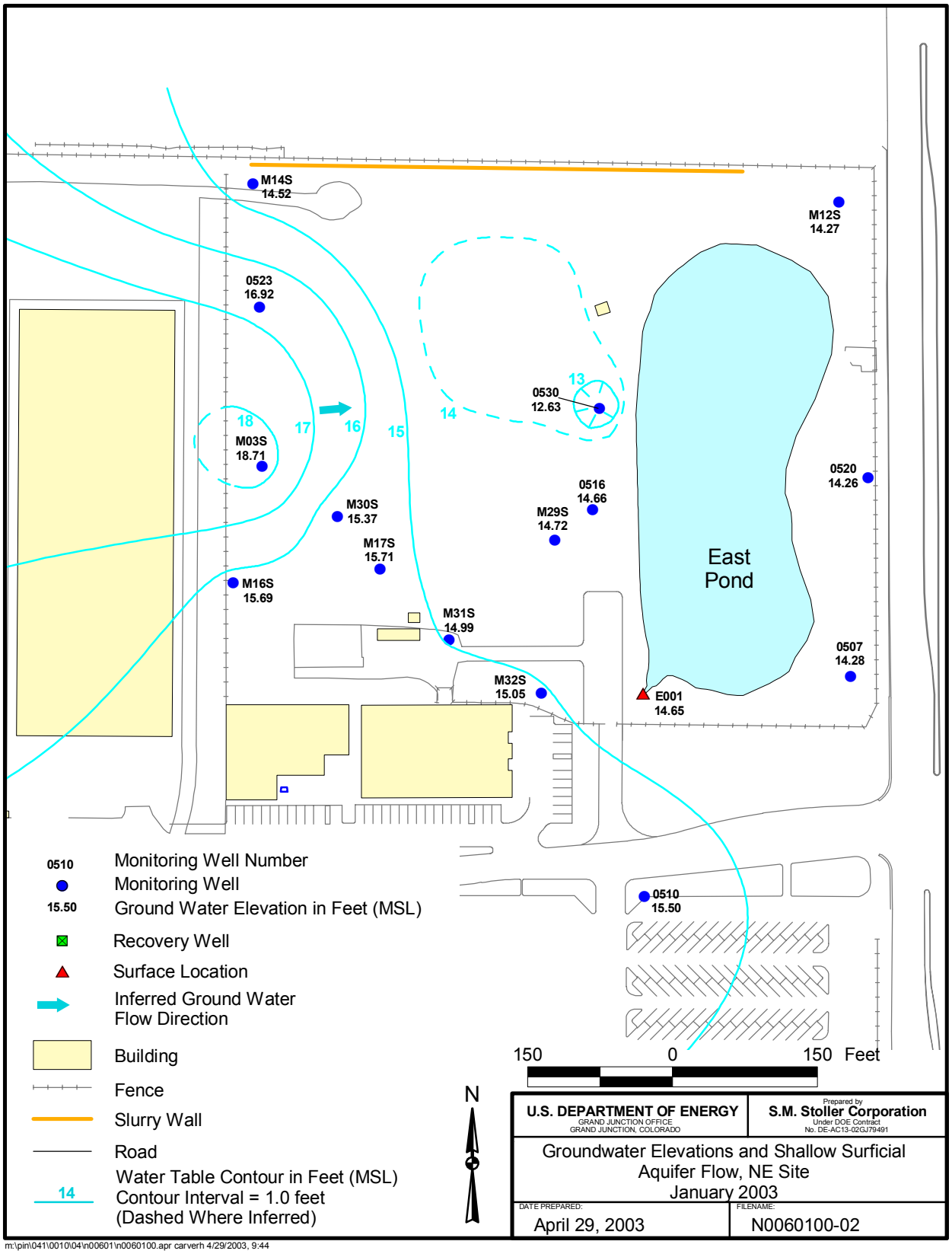


Figure 3. Ground Water Elevations and Shallow Surficial Aquifer Flow, Northeast Site, January 2003

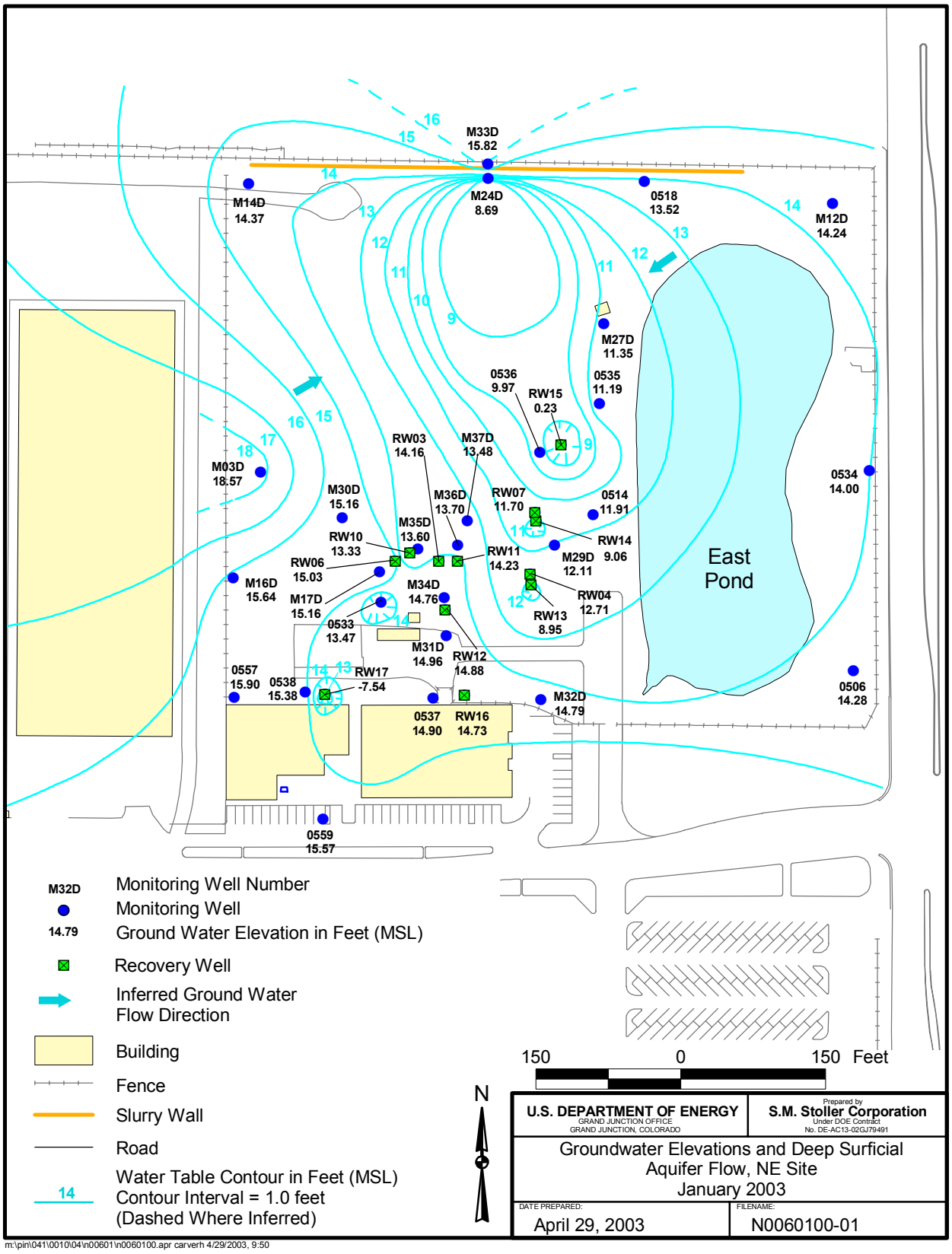
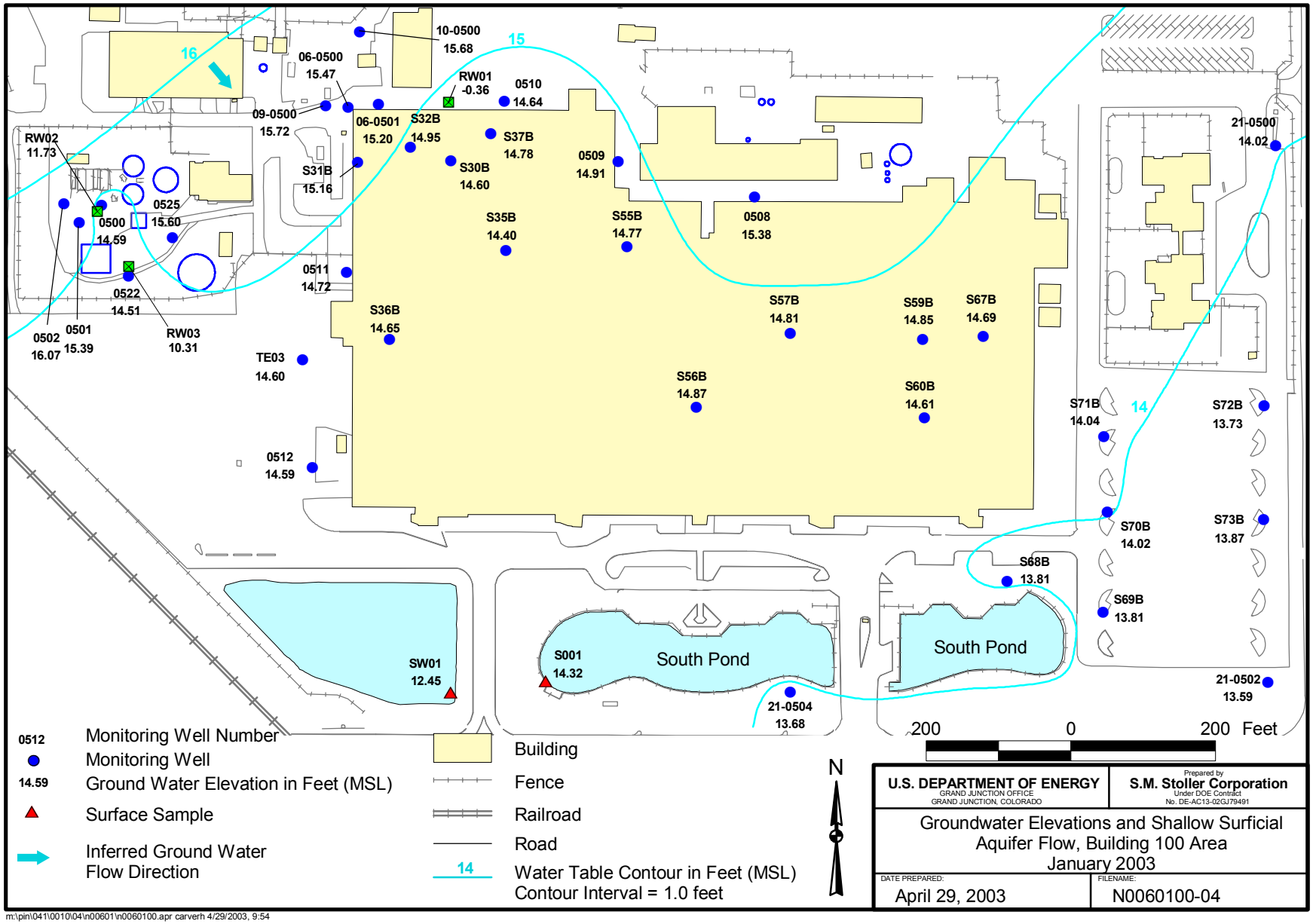


Figure 4. Ground Water Elevations and Deep Surficial Aquifer Flow, Northeast Site, January 2003



m:\pin\041\0010\04\n00601\n0060100.apr carverh 4/29/2003, 9:54

Figure 5. Ground Water Elevations and Shallow Surficial Aquifer Flow, Building 100 Area, January 2003

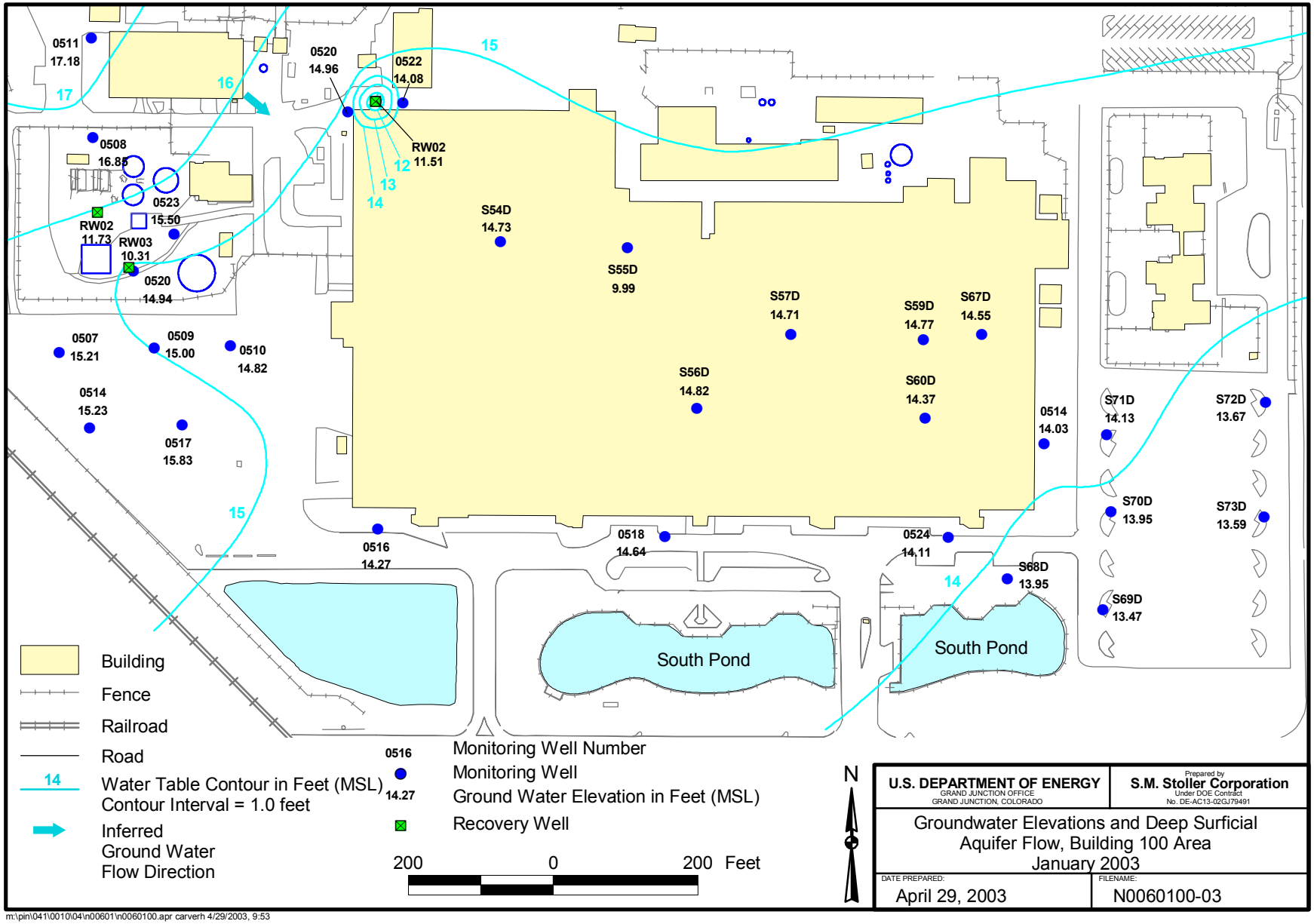


Figure 6. Ground Water Elevations and Deep Surficial Aquifer Flow, Building 100 Area, January 2003

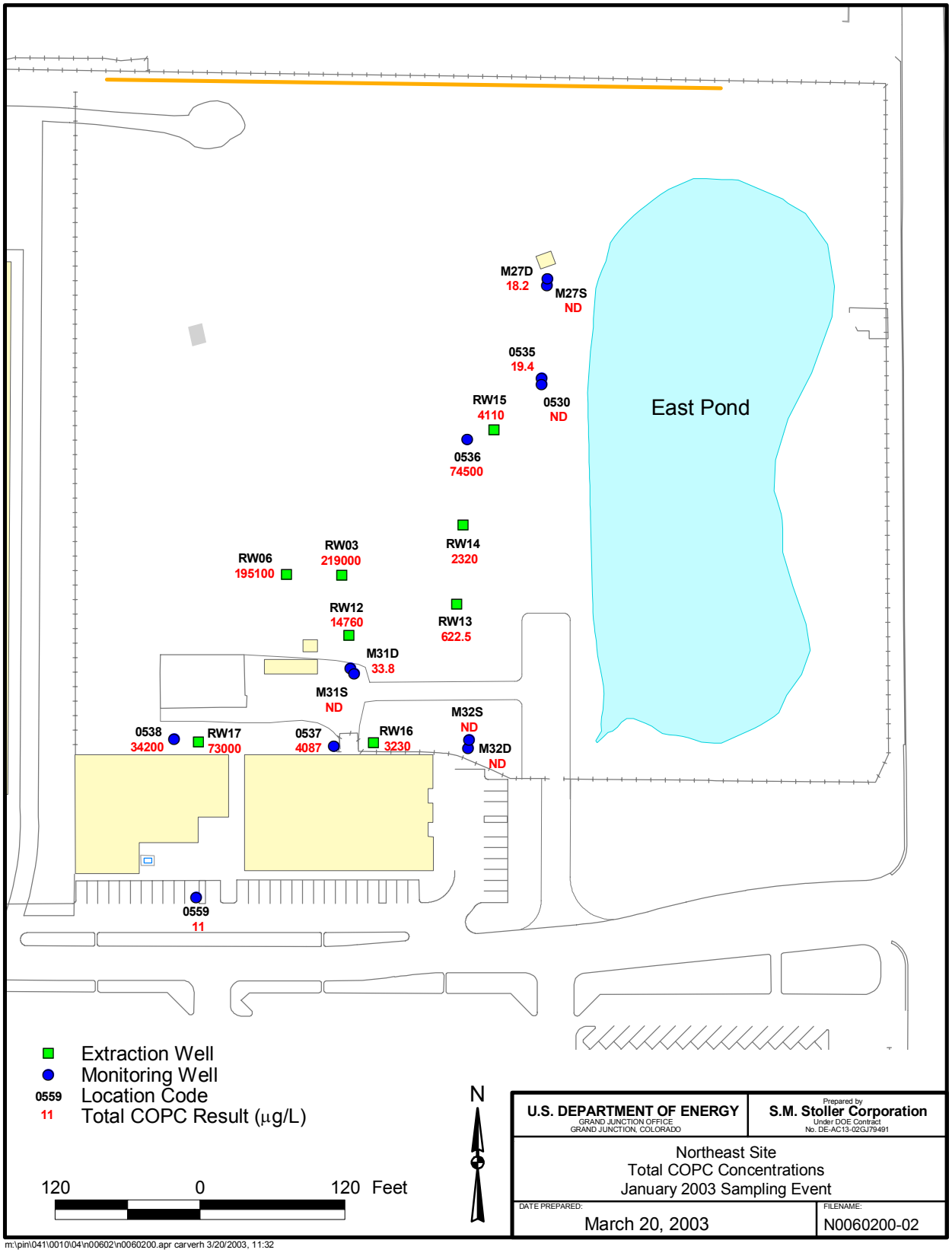


Figure 7. Northeast Site Total COPC Concentrations January 2003 Sampling Event (wells without COPC values or "NDs" were not sampled during this quarter)

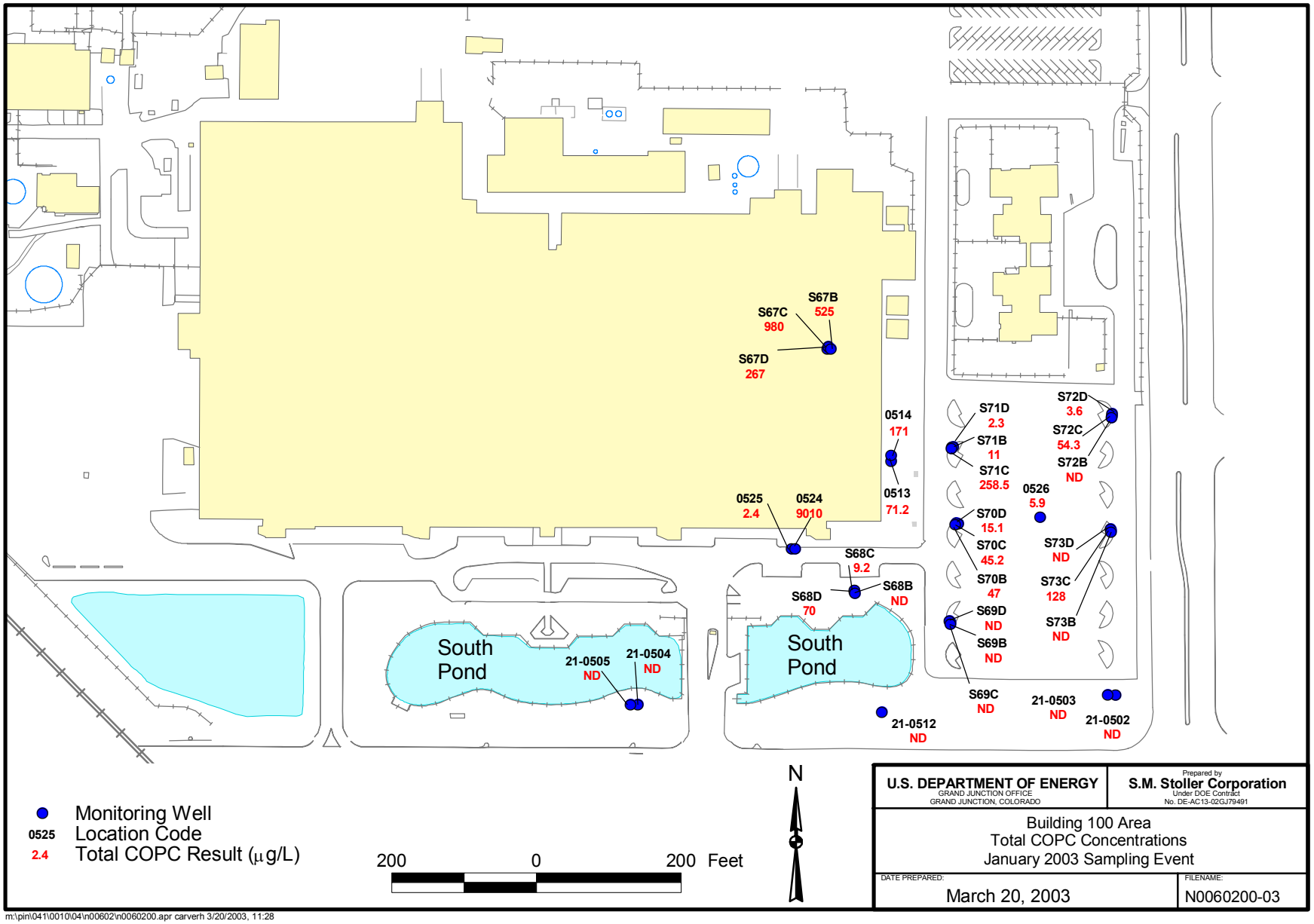


Figure 8. Building 100 Area Total COPC Concentrations January 2003 Sampling Event

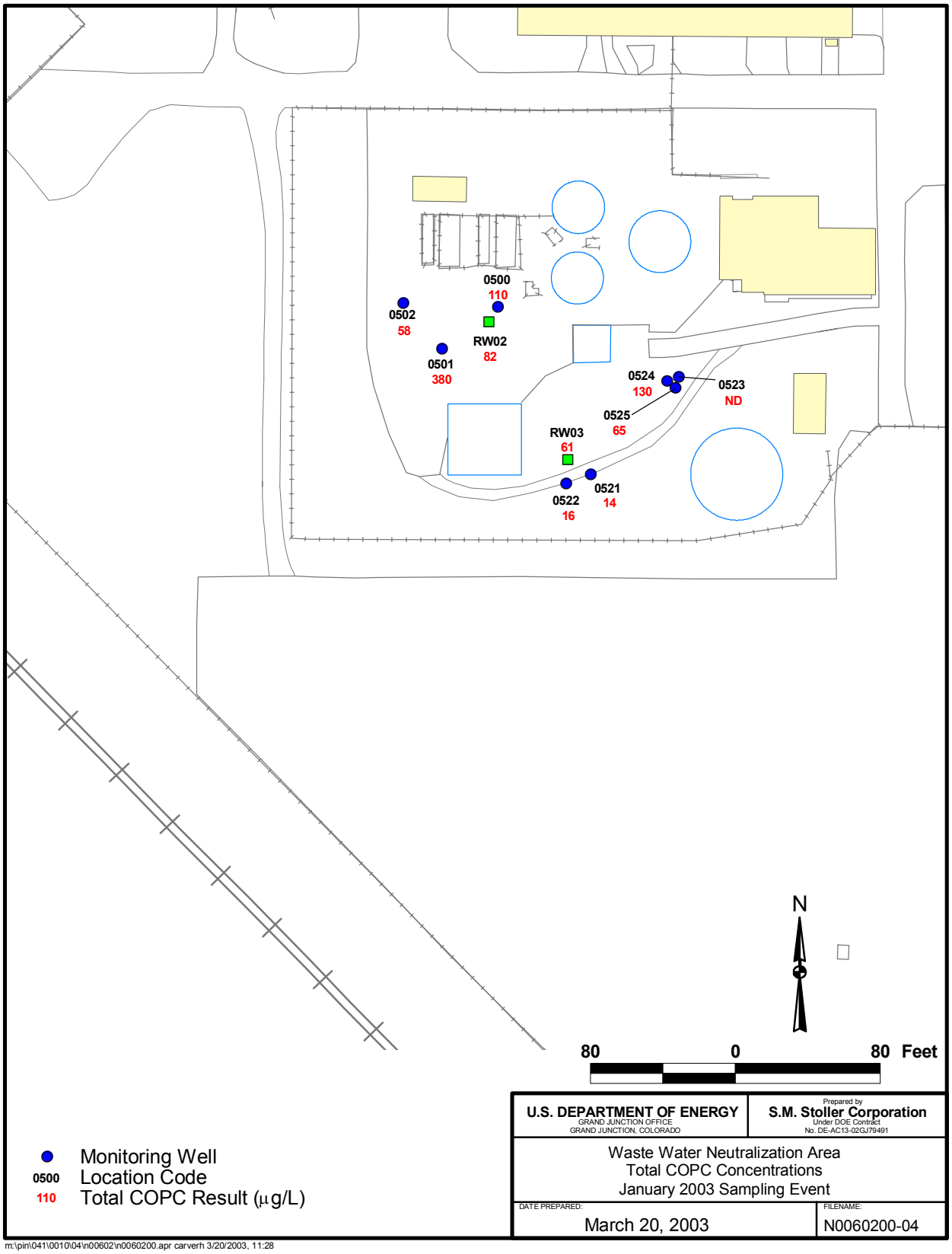


Figure 9. WWNA Total COPC Concentrations January 2003 Sampling Event

Table 1. WWNA Recovery Well Startup Monitoring Arsenic Concentrations (reported in milligrams per liter)

Sample Date	RW02	RW03	RW02/RW03 combined effluent
2/26/2001	0.08	0.1	0.095
2/27/2001	0.074	0.1	0.091
2/28/2001	0.074	0.091	0.074
3/1/2001	0.084	0.096	0.088
3/2/2001	0.088	0.095	0.089
3/5/2001	0.13	0.22	0.1
3/12/2001	0.37	0.11	0.13
3/19/2001	0.42	0.12	0.12
3/26/2001	0.15	0.16	0.8
4/2/2001	0.18	0.12	0.13
4/16/2001	0.18	0.17	0.13
5/1/2001	0.16	0.071	0.1
5/15/2001	0.14	0.15	0.093
5/30/2001	0.13	0.07	0.16
6/11/2001	0.11	0.068	0.083
6/26/2001	0.13	0.067	0.096
7/9/2001	0.14	0.054	0.087
7/23/2001	0.14	0.25	0.074
8/6/2001	0.11	0.2	0.18
8/21/2001	0.13	0.074	0.084
9/5/2001	0.13	0.054	0.091
10/8/2001	0.11	0.14	0.07
11/6/2001	0.095	0.053	0.076
12/7/2001	0.13	0.081	0.084
1/10/2002	0.11	0.081	0.076
2/5/2002	0.11	0.055	0.075
3/6/2002	0.12	0.05	0.076
4/2/2002	0.084	0.055	0.069
4/15/2002	--	0.049	--
4/16/2002	0.078	--	--
5/8/2002	0.11	0.048	0.071
6/4/2002	0.095	0.078	0.058
7/3/2002	0.16	0.056	0.074
7/15/2002	0.098	0.057	--
8/8/2002	0.0036J	0.11	0.065
9/10/2002	0.12	0.097	0.07
10/3/2002	0.097	0.054	0.071
11/22/2002	0.11	0.067	0.057
12/11/2002	0.11	0.056	0.07
1/2/2003	0.097	0.049	0.064
1/13/2003	0.082	0.061	--
2/4/2003	0.12	0.047	0.063
3/4/2003	0.079	0.19	0.059

-- = Not measured
J = Estimated value, result is between the reporting limit and the method detection limit.

Table 2. Water-Level Data at the STAR Center

Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
PIN06	**Old Drum Storage Site**			
0500	1/6/2003	16:27	2.53	15.47
0501	1/6/2003		3.10	15.20
PIN09	**Incinerator Site**			
0500	1/6/2003	16:21	2.25	15.72
PIN10	**Incinerator Ditch**			
0500	1/6/2003	16:29	2.22	15.68
PIN12	**Industrial Drain Leaks Bldg 100**			
0508	1/6/2003		2.98	15.38
0509	1/6/2003		3.13	14.91
0510	1/6/2003		3.42	14.64
0511	1/6/2003	15:26	3.08	14.72
0512	1/6/2003	15:28	2.22	14.59
0513	1/6/2003	14:18	4.32	14.18
0514	1/6/2003	14:17	4.47	14.03
0515	1/6/2003	15:14	3.65	14.25
0516	1/6/2003	15:13	3.73	14.27
0517	1/6/2003	15:06	3.20	14.70
0518	1/6/2003	15:02	3.30	14.64
0520	1/6/2003	16:28	3.05	14.96
0521	1/6/2003	16:26	3.23	14.82
0522	1/6/2003		4.12	14.08
0523	1/6/2003		4.09	14.07
0524	1/6/2003	14:51	3.30	14.11
0525	1/6/2003	14:54	3.32	14.10
0526	1/6/2003	13:49	2.86	13.96
0527	1/6/2003	13:35	9.85	8.22
0528	1/6/2003	15:16	9.48	8.12
RW01	1/6/2003		18.61	-0.36
RW02	1/6/2003		6.82	11.51
S29C	1/6/2003		3.72	14.79
S30B	1/6/2003		3.91	14.60
S31B	1/6/2003		3.35	15.16
S32B	1/6/2003		3.56	14.95
S33C	1/6/2003		3.70	14.81
S35B	1/6/2003		4.11	14.40
S36B	1/6/2003		3.86	14.65
S37B	1/6/2003		3.73	14.78
S54D	1/6/2003		3.78	14.73
S55B	1/6/2003		3.74	14.77
S55C	1/6/2003		3.73	14.78
S55D	1/6/2003		8.52	9.99
S56B	1/6/2003		3.64	14.87
S56C	1/6/2003		3.60	14.91
S56D	1/6/2003		3.69	14.82

Table 2 (continued). Water-Level Data at the STAR Center

Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
S57B	1/6/2003		3.70	14.81
S57C	1/6/2003		3.68	14.83
S57D	1/6/2003		3.80	14.71
S59B	1/6/2003		3.66	14.85
S59C	1/6/2003		3.71	14.80
S59D	1/6/2003		3.74	14.77
S60B	1/6/2003		3.90	14.61
S60C	1/6/2003		3.98	14.53
S60D	1/6/2003		4.14	14.37
S67B	1/6/2003		3.78	14.69
S67C	1/6/2003		3.72	14.75
S67D	1/6/2003		3.93	14.55
S68B	1/6/2003	14:30	4.09	13.81
S68C	1/6/2003	14:34	3.73	14.17
S68D	1/6/2003	14:30	3.95	13.95
S69B	1/6/2003	14:25	2.19	13.81
S69C	1/6/2003	14:23	2.21	13.79
S69D	1/6/2003	14:22	2.53	13.47
S70B	1/6/2003	14:43	2.68	14.02
S70C	1/6/2003	14:41	2.75	13.95
S70D	1/6/2003	14:37	2.75	13.95
S71B	1/6/2003	14:15	4.36	14.04
S71C	1/6/2003	14:14	4.38	14.02
S71D	1/6/2003	14:14	4.27	14.13
S72B	1/6/2003	14:07	4.47	13.73
S72C	1/6/2003	14:08	4.49	13.71
S72D	1/6/2003	14:09	4.53	13.67
S73B	1/6/2003	14:01	3.13	13.87
S73C	1/6/2003	14:02	3.34	13.66
S73D	1/6/2003	14:03	3.41	13.59
TE03	1/6/2003	15:24	2.40	14.60
PIN15	**Northeast Site**			
0506	1/6/2003	12:46	2.72	14.28
0507	1/6/2003	12:45	2.72	14.28
0510	1/6/2003	13:38	2.02	15.50
0513	1/6/2003	12:53	9.53	8.07
0514	1/6/2003	13:13	5.59	11.91
0515	1/6/2003	13:13	5.06	12.44
0516	1/6/2003	13:12	2.74	14.66
0518	1/6/2003	12:57	4.28	13.52
0520	1/6/2003	12:49	2.94	14.26
0523	1/6/2003	10:52	1.08	16.92
0530	1/6/2003	13:07	4.77	12.63
0533	1/6/2003	09:51	4.53	13.47
0534	1/6/2003	12:50	3.30	14.00

Table 2 (continued). Water-Level Data at the STAR Center

Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
0535	1/6/2003	13:05	6.41	11.19
0536	1/6/2003	13:10	7.63	9.97
0537	1/6/2003	11:11	3.70	14.90
0538	1/6/2003	11:06	3.42	15.38
0557	1/6/2003	11:05	3.20	15.90
0559	1/6/2003	13:29	3.22	15.57
E001	1/6/2003	13:26	1.37	14.65
M03D	1/6/2003	10:48	-0.47	18.57
M03S	1/6/2003	10:45	-0.61	18.71
M12D	1/6/2003	12:54	2.96	14.24
M12S	1/6/2003	12:56	3.23	14.27
M14D	1/6/2003	10:30	3.63	14.37
M14S	1/6/2003	10:31	3.48	14.52
M16D	1/6/2003	11:01	2.56	15.64
M16S	1/6/2003	11:02	2.51	15.69
M17D	1/6/2003	09:45	2.44	15.16
M17S	1/6/2003	09:48	1.79	15.71
M24D	1/6/2003	10:34	9.11	8.69
M27D	1/6/2003	13:02	6.25	11.35
M27S	1/6/2003	13:00	3.95	13.65
M29D	1/6/2003	13:15	5.49	12.11
M29S	1/6/2003	13:16	2.88	14.72
M30D	1/6/2003	10:12	2.74	15.16
M30S	1/6/2003	10:13	2.43	15.37
M31D	1/6/2003	10:03	3.04	14.96
M31S	1/6/2003	10:05	3.01	14.99
M32D	1/6/2003	11:20	3.01	14.79
M32S	1/6/2003	11:11	2.75	15.05
M33D	1/6/2003	10:36	1.78	15.82
M34D	1/6/2003	09:54	3.34	14.76
M35D	1/6/2003	09:39	4.40	13.60
M36D	1/6/2003	09:58	4.10	13.70
M37D	1/6/2003	10:00	4.52	13.48
RW03	1/6/2003	09:35	3.74	14.16
RW04	1/6/2003	11:22	4.89	12.71
RW06	1/6/2003	09:30	2.97	15.03
RW07	1/6/2003	11:25	5.90	11.70
RW10	1/6/2003	09:11	4.57	13.33
RW11	1/6/2003	09:56	3.77	14.23
RW12	1/6/2003	09:53	3.42	14.88
RW13	1/6/2003	11:22	8.65	8.95
RW14	1/6/2003	11:24	8.84	9.06
RW15	1/6/2003	13:08	16.97	0.23
RW16	1/6/2003	11:15	3.27	14.73
RW17	1/6/2003	11:09	26.34	-7.54

Table 2 (continued). Water-Level Data at the STAR Center

Location	Measurement		Water Depth From Land Surface (ft)	Ground Water Elevation (ft NGVD)
	Date	Time		
PIN18	**Wastewater Neutralization Area**			
0500	1/6/2003	16:07	5.51	14.59
0501	1/6/2003	16:08	4.61	15.39
0502	1/6/2003	16:10	3.93	16.07
0503	1/6/2003	15:43	2.46	15.22
0504	1/6/2003	16:12	2.77	16.83
0505	1/6/2003	15:41	2.66	15.22
0506	1/6/2003	15:39	2.79	14.92
0507	1/6/2003	15:44	2.52	15.21
0508	1/6/2003	16:14	2.65	16.85
0509	1/6/2003	15:42	2.83	15.00
0510	1/6/2003	15:38	2.94	14.82
0511	1/6/2003		1.62	17.18
0512	1/6/2003		1.40	17.20
0513	1/6/2003		1.57	17.23
0514	1/6/2003	15:33	2.55	15.23
0515	1/6/2003	15:32	3.36	15.05
0516	1/6/2003	15:31	3.51	14.90
0517	1/6/2003	15:36	2.42	15.83
0518	1/6/2003	15:37	2.48	15.72
0519	1/6/2003	15:34	3.62	14.66
0520	1/6/2003	16:03	3.06	14.94
0521	1/6/2003	16:02	3.62	14.48
0522	1/6/2003	16:03	3.59	14.51
0523	1/6/2003	15:58	3.90	15.50
0524	1/6/2003	16:01	3.55	15.45
0525	1/6/2003	16:00	3.30	15.60
0526	1/6/2003	15:51	1.20	17.40
RW02	1/6/2003	16:07	8.37	11.73
RW03	1/6/2003	16:04	7.99	10.31
PIN21	**Perimeter Monitor Wells**			
0500	1/6/2003	13:46	4.08	14.02
0501	1/6/2003	13:45	4.20	13.80
0502	1/6/2003	13:56	1.61	13.59
0503	1/6/2003	13:55	1.77	13.43
0504	1/6/2003	14:57	3.92	13.68
0505	1/6/2003	14:58	3.80	13.60
0512	1/6/2003	14:27	3.70	13.60
PIN23	**Southwest Pond**			
SW01	1/6/2003	15:10		12.45
PIN37	**South Pond**			
S001	1/6/2003	15:08		14.32

Table 3. Floridan Aquifer Monitoring Well Water Elevations

Well Identification	Previous Water Level Elevation (ft, MSL)	Current Water Level Elevation (ft, MSL)
PIN15−0513	7.13	8.07
PIN12−0527	7.26	8.22
PIN12−0528	7.14	8.12

Table 4. Vertical Hydraulic Differential

Water Level Measured From	Well Identification	Water Level Elevation (ft, MSL)
Deep Surficial Aquifer	PIN15−M12D	14.24
Floridan Aquifer	PIN15−0513	8.07

Table 5. Surface Water Elevations

Pond Location	Previous Water Level Elevation (ft, MSL)	Current Water Level Elevation (ft, MSL)
East Pond	13.72	14.65
South Pond	13.31	14.32
West Pond	16.10	NM
Southwest Pond	13.31	12.45[a]

[a]Questionable reading
NM = not measured

Table 6. Field Measurements of Samples Collected at the STAR Center

Location	Screen Depth (ft bls)	Temperature (°C)	Specific Conductance (µmhos/cm)[a]	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)
PIN06		**Old Drum Storage Site**					
0500	3-13	22.34	655	10.5	6.77	-78	0.52
0501	3-13	21.35	915	2.79	6.88	66.4	0.4
PIN09		**Incinerator Site**					
0500	3-13	22.77	819	4.95	6.92	-30	0.28
PIN12		**Industrial Drain Leaks Bldg 100**					
0513	15-25	23.54	895	3.83	6.78	-80.8	0.35
0514	30-40	23.29	1,510	32.1	6.63	-266	0.33
0524	27-37	24.91	1,339	10.8	6.63	-296	0.52
0525	12-22	25.26	812	18.6	6.81	-309	0.37
0526	19.5-29.5	29.55	2,095	13.5	6.61	-283	0.39
S30B	5-15	23.03	1,289	6.61	6.65	-232	0.68
S31B	5-15	23.87	683	19.9	6.43	-214	1.41
S32B	5.5-15.5	22.65	1,334	11.2	6.68	-241	0.85
S33C	11-21	23	1,316	78.1	6.67	-275	0.31
S35B	5-15	22.48	1,658	19.5	6.46	-268	0.33
S37B	5-15	22.03	937	34.5	6.74	-268	0.35
S56B	10-19.8	22.69	1,505	79.4	6.74	-298	0.21
S59B	10-19.8	21.31	1,211	16.4	7.13	--	--
S67B	10-19.83	21.73	1,326	141	6.76	-70.4	0.49
S67C	20-29.83	21.76	1,259	119	6.74	-85.6	0.54
S67D	30-39.83	21.8	1,416	269	6.75	-78.1	0.74
S68B	10-20	21.93	984	22.6	6.7	-200	0.66
S68C	18-28	25.82	1,036	8.17	6.67	-262	0.76
S68D	30-40	23.38	1,477	12.5	6.65	-277	0.74
S69B	10-20	28.16	733	21.4	6.79	-224	1.48
S69C	20-30	28.28	1,069	12.9	6.71	-253	1.06
S69D	30-40	27.56	1,591	3.12	6.74	-195	--
S70B	10-20	26.21	1,922	17.9	6.87	--	--
S70C	20-30	28.91	1,558	50.6	6.62	-278	0.84
S70D	30-40	28.12	1,569	32.6	6.68	-151	--
S71B	10-20	27.24	1,502	35.7	6.81	-287	0.77
S71C	20-30	26.05	1,621	709	6.57	-29	0.8
S71D	30-40	28.34	1,474	49.2	6.62	-306	0.67
S72B	10-20	27.71	1,711	82.8	6.25	-296	0.77
S72C	20-30	27.62	811	9.87	6.65	-297	0.48
S72D	30-40	29.21	1,457	18	6.67	-301	0.65
S73B	10-20	28.22	988	>1,000	6.69	-290	0.39
S73C	20-30	29.74	1,551	13.7	6.6	-288	0.37
S73D	30-40	29.62	1,491	132	6.66	-307	0.31
PIN15		**Northeast Site**					
0515	7.6-17.6	21.74	710	3.31	6.98	-39.1	0.3
0530	5-14.5	20.7	520	17.1	7.02	-81.6	0.55
0535	20.5-30	23.78	1,682	365	6.61	-200.5	0.25

Table 6 (continued). Field Measurements of Samples Collected at the STAR Center

Location	Screen Depth (ft bls)	Temperature (°C)	Specific Conductance (µmhos/cm)[a]	Turbidity (NTU)	pH	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)
0536	17.5-27	24.74	1,565	23.7	6.64	-130.4	0.43
0537	17.5-30	24.87	1,152	17.1	6.67	-66.8	0.41
0538	19.5-29	21.31	1,122	13.1	6.5	-123.8	0.35
0559	22-31.5	27.36	1,425	10.9	6.73	-140.5	0.35
M17S	5-14.5	19.92	607	1.14	7.25	8.1	0.27
M27D	21-31	23.95	1,866	30	6.5	-109.1	0.39
M27S	6-16	21.04	554	1.41	6.98	-33.9	0.57
M29D	20-30	24.41	428	1.52	6.43	-35.5	0.41
M29S	5-15	20.99	530	18.4	7.05	24.7	1.25
M31D	19.5-29.5	24.92	1,254	1.87	6.67	-63.4	1.17
M31S	4.5-14.5	23.77	1,318	3.1	6.78	-25.4	0.45
M32D	14-24	24.6	628	17.1	7.02	-93.6	0.13
M32S	3-13	18.94	680	13.6	7.02	-53.4	0.45
M35D	20-30	24.83	4,103	1.75	5.69	-84.7	0.84
PIN18		**Wastewater Neutralization Area**					
0500	11-16	22.44	476	28	7.21	-137.4	0.26
0501	11-16	22.95	822	18.5	6.82	-119.9	0.29
0502	11-16	22.83	761	9.19	6.82	-59.1	0.84
0514	32.5-42.5	25.28	1,511	40	6.69	-322	0.47
0515	22.5-32.5	26.23	1,312	7.21	6.66	-280	0.6
0516	12.5-22	26.13	1,294	15.3	6.64	-270	0.56
0521	20-30	23.82	948	16.7	6.86	-95.4	0.35
0522	5-15	21.48	552	17.4	6.82	-14.9	0.38
0523	32.5-42.5	23.92	949	53.8	6.84	-80.4	0.32
0524	20-30	24.17	601	7.18	6.92	-102.5	0.35
0525	5-15	20.32	332	18.4	6.8	76.7	1.42
PIN21		**Perimeter Monitor Wells**					
0502	7-17	23.15	883	6.12	6.67	-46.1	0.51
0503	20-28	25.19	873	19.8	6.74	-59.2	0.28
0504	7-17	21.19	583	16.8	6391	-28.4	0.67
0505	20-28	23.66	791	13.2	6.81	-61.4	0.34
0512	20-29.5	22.91	934	35.9	6.71	-206	0.4

[a]Temperature corrected to 25°C
-- Not measured

Table 7. COPC Concentrations at the Northeast Site
(reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[a]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[b]
FDEP MCL			**3**	**70**	**63**	**1**	**5**	**1**	**1,000**	
PIN15			**Northeast Site**							
0506	12-21.5	4/17/2002	<1	0.14J	0.14J	<1	<5	<1	<1	ND
		10/12/2002	<1	<1	ND	<1	<5	<1	<1	ND
0507	5-14.5	4/17/2002	<1	0.15J	0.15J	0.24J	0.37J	<1	<1	ND
		10/12/2002	<1	<1	ND	<1	0.3J	<1	<1	ND
0510	4-13.5	4/17/2002	<1	<1	ND	<1	<5	<1	<1	ND
0513	130-150	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
0514	15.5-25.5	1/8/2002	<1	<1	ND	3	0.32J	7.9	1.6	12.5
		4/17/2002	<1	<1	ND	<1	1.4J	<1	<1	ND
		7/12/2002	<1	<1	ND	<1	0.47JB	<1	<1	ND
		10/13/2002	<1	<1	ND	<1	0.4JB	4.5	0.34J	4.5
0515	7.6-17.6	1/8/2002	<1	<1	ND	<1	<5	<1	<1	ND
		4/17/2002	<1	<1	ND	<1	1J	<1	<1	ND
		7/12/2002	<1	<1	ND	<1	0.34JB	<1	<1	ND
		10/13/2002	<1	<1	ND	<1	0.62JB	<1	<1	ND
0516	0.3-10.3	1/8/2002	<1	<1	ND	<1	1.3J	<1	<1	ND
		4/17/2002	<1	<1	ND	<1	<5	<1	<1	ND
		7/12/2002	<1	<1	ND	<1	0.35JB	<1	<1	ND
		10/13/2002	<1	<1	ND	<1	0.77JB	<1	<1	ND
0518	23-28	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
0520	5-14.5	4/17/2002	<1	<1	ND	<1	<5	<1	<1	ND
		10/12/2002	<1	<1	ND	<1	0.31J	<1	<1	ND
0523	5-14.5	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
0530	5-14.5	1/8/2002	<1	<1	ND	<1	1.5J	<1	<1	ND
		4/17/2002	<1	<1	ND	<1	<5	<1	<1	ND
		7/12/2002	<1	<1	ND	<1	<5	<1	<1	ND
		10/13/2002	<1	<1	ND	<1	0.73JB	<1	<1	ND
		1/10/2003	0.95J	<1	ND	<1	<5	<1	0.4J	ND
0531	5-14.5	4/19/2002	<1	<1	ND	<1	0.76J	<1	<1	ND
0533	19.5-29.5	4/19/2002	7,800	16,000	16,000	560	140J	<250	<250	24,360
0534	19.5-29	4/17/2002	<1	0.19J	0.19J	<1	<5	<1	<1	ND
		10/12/2002	<1	<1	ND	<1	<5	<1	<1	ND
0535	20.5-30	1/8/2002	0.13J	0.73J	0.73J	<1	<5	1.5	1	2.5
		4/17/2002	<1	<1	ND	<1	<5	2	0.88J	2
		7/12/2002	<1	<1	ND	<1	<5	1.9	0.66J	1.9
		10/13/2002	<1	<1	ND	<1	1.4JB	1.5	0.27J	1.5
		1/10/2003	<1	7.2	7.2	11	<5	1.2	0.59J	19.4

Table 7 (continued). COPC Concentrations at the Northeast Site
(reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[a]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[b]
FDEP MCL			**3**	**70**	**63**	**1**	**5**	**1**	**1,000**	
0536	17.5-27	1/9/2002	110,000	32,000	32,000	1,800J	<12,000	<2,500	<2,500	142,000
		4/19/2002	110,000	15,000	15,000	560J	<5,000	<1,000	<1,000	125,000
		7/12/2002	69,000	5,700	5,700	<2,500	1,600JB	<2,500	<2,500	74,700
		10/14/2002	110,000	5,800	5,800	<2,500	2,500JB	<2,500	<2,500	115,800
		1/10/2003	71,000	3,500	3,500	<2,500	<12,000	<2,500	<2,500	74,500
0537	17.5-30	1/10/2002	29J	7,800	7,800	2,100	<250	<250	31J	9,900
		4/18/2002	21J	3,600	3,600	1,800	16J	<50	<50	5,400
		7/11/2002	<100	11,000	11,000	4,800	<500	14J	130	15,930
		10/14/2002	<250	5,600	5,600	860	<1,200	<250	<250	6,460
		1/9/2003	87	2,100	2,100	1,900	<250	<50	<50	4,087
0538	19.5-29	1/10/2002	<500	11,000	11,000	40,000	<2,500	75J	2,000	53,000
		4/18/2002	<250	2,500	2,500	24,000	<1,200	<250	550	27,050
		7/12/2002	<250	970	970	20,000	<1,200	44J	550	21,520
		10/14/2002	<250	2,000	2,000	24,000	<1,200	25J	540	26,540
		1/9/2003	<1,000	1,200	1,200	33,000	<5,000	<1,000	930J	34,200
0557	21-31	4/18/2002	<1	<1	ND	3	<5	<1	<1	3
		10/14/2002	<1	<1	ND	3.6	0.54J	<1	<1	3.6
0558	21.5-31	1/10/2002	<50	<50	ND	4,600	<250	13J	<50	4,600
		4/16/2002	<250	<250	ND	1,500	340J	<250	<250	1,500
0559	22-31.5	1/14/2002	1.4	0.55J	0.55J	<1	1.3J	0.12J	0.72J	1.4
		4/17/2002	<1	<1	ND	<1	<5	<1	<1	ND
		7/11/2002	<1	0.5J	0.5J	<1	<5	0.31J	<1	ND
		10/12/2002	<1	<1	ND	<1	<5	<1	<1	ND
		1/10/2003	<1	<1	ND	<1	<5	11	0.41J	11
M03D	15-25	4/18/2002	<1	<1	ND	0.61J	<5	<1	<1	ND
		10/15/2002	<1	<1	ND	0.42J	0.92JB	<1	<1	ND
M03S	2.5-12	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
		10/15/2002	<1	<1	ND	<1	0.85JB	<1	<1	ND
M12D	22.5-32.5	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
M12S	5-14.5	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
M14D	18.5-28.5	4/17/2002	<1	<1	ND	0.91J	<5	<1	<1	ND
M14S	4-14	4/17/2002	<1	<1	ND	<1	<5	<1	<1	ND
M16D	18.5-28.5	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
M16S	5-14.5	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND
M17D	19.5-29.5	4/18/2002	21,000	140,000	140,000	3,800	65,000	<2,500	62,000	291,800
M17S	5-14.5	4/18/2002	10	7.1	7.1	0.61J	1.2J	<1	28	45.1
M24D	20-30	4/18/2002	<1	<1	ND	<1	<5	<1	<1	ND

Table 7 (continued). COPC Concentrations at the Northeast Site (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[a]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[b]
FDEP MCL			**3**	**70**	**63**	**1**	**5**	**1**	**1,000**	
M27D	21-31	1/8/2002	<1	<1	ND	<1	1.3J	10	1.2	11.2
		4/17/2002	<1	<1	ND	<1	<5	21	2.2	23.2
		7/12/2002	<1	<1	ND	<1	<5	18	1.8	19.8
		10/13/2002	<1	<1	ND	<1	1.4JB	23	2.4	25.4
		1/10/2003	<1	0.15J	0.15J	1.2	<5	16	1	18.2
M27S	6-16	1/8/2002	<1	<1	ND	<1	0.48J	<1	<1	ND
		4/17/2002	<1	<1	ND	<1	<5	<1	<1	ND
		7/12/2002	<1	<1	ND	<1	<5	<1	<1	ND
		10/13/2002	<1	<1	ND	<1	0.69JB	0.18J	<1	ND
		1/10/2003	<1	<1	ND	<1	<5	<1	<1	ND
M29D	20-30	1/9/2002	<1	<1	ND	<1	<5	1	<1	1
		4/17/2002	<1	<1	ND	<1	0.9J	0.9J	<1	ND
		7/12/2002	<1	<1	ND	<1	0.37JB	<1	<1	ND
		10/14/2002	<1	<1	ND	<1	1.1JB	0.36J	<1	ND
M29S	5-15	1/9/2002	<1	<1	ND	<1	0.39J	<1	<1	ND
		4/17/2002	<1	<1	ND	<1	1.3J	<1	<1	ND
		7/12/2002	<1	<1	ND	<1	0.39JB	<1	<1	ND
		10/14/2002	<1	<1	ND	<1	0.78JB	<1	<1	ND
M30D	20.5-30.5	4/18/2002	<1	<1	ND	2.2	0.87J	<1	<1	2.2
		10/14/2002	<10	71	71	380	4.7J	<10	<10	451
M30S	5.5-15.5	4/18/2002	<2.5	3.8	3.8	41	<12	<2.5	<2.5	44.8
		10/14/2002	<1	<1	ND	0.58J	0.51J	<1	<1	ND
M31D	19.5-29.5	1/10/2002	<50	3,400	3,400	3,200	63J	<50	34J	6,600
		4/19/2002	<5	180	180	520	<25	11	4.4J	711
		7/12/2002	<5	10	10	280	<25	13	<5	303
		10/14/2002	<1	<1	ND	54	1.7J	15	0.93J	69
		1/9/2003	<1	0.65J	0.65J	25	0.47J	8.8	0.65J	33.8
M31S	4.5-14.5	1/10/2002	<1	0.75J	0.75J	25	<5	3	0.25J	28
		4/19/2002	<1	0.32J	0.32J	8.7	<5	3.2	<1	11.9
		7/12/2002	<1	<1	ND	<1	0.64JB	<1	<1	ND
		10/14/2002	<1	110	110	71	0.91JB	4.3	<1	185.3
		1/9/2003	<1	<1	ND	<1	<5	<1	<1	ND
M32D	14-24	1/8/2002	<1	<1	ND	<1	0.67J	0.23J	<1	ND
		4/17/2002	<1	<1	2.2	<1	<5	3.1	<1	5.3
		7/11/2002	<1	<1	ND	<1	<5	<1	<1	ND
		10/14/2002	<1	<1	ND	0.27J	<5	<1	<1	ND
		1/9/2003	<1	<1	ND	<1	<5	<1	<1	ND

Table 7 (continued). COPC Concentrations at the Northeast Site (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[a]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[b]
FDEP MCL			**3**	**70**	**63**	**1**	**5**	**1**	**1,000**	
M32S	3-13	1/8/2002	0.35J	2	2	0.55J	<5	<1	<1	2
		4/17/2002	<1	<1	ND	<1	1.2J	<1	<1	ND
		7/11/2002	<1	<1	ND	<1	<5	<1	<1	ND
		10/14/2002	<1	<1	ND	<1	<5	<1	<1	ND
		1/9/2003	<1	<1	ND	<1	<5	<1	<1	ND
M33D	20-30	4/18/2002	<1	<1	ND	<1	0.35J	<1	<1	ND
M34D	20-30	1/10/2002	<250	9,700	9,700	15,000	<1,200	47J	48J	24,700
		4/19/2002	<500	15,000	15,000	14,000	1,000J	<500	3,400	32,400
		7/12/2002	<2,500	39,000	39,000	21,000	930JB	<2,500	30,000	90,000
		10/14/2002	<2,500	4,300	4,300	21,000	4,000J	380J	6,400	31,700
M35D	20-30	4/19/2002	440,000	310,000	310,000	<100,000	9,000,000	<100,000	170,000	9,920,000
M36D	20-30	4/19/2002	<250	11,000	11,000	15,000	<1,200	210J	25,000	51,000
M37D	20-30	4/19/2002	<100	130	130	5,500	<500	100	2,600	8,330
RW03	10.5-30.5	1/9/2003	26,000	38,000	38,000	4,000J	130,000	<5,000	25,000	219,000
RW06	11-31	1/11/2002	72,000	61,000	61,000	22,000	520,000	<5,000	43,000	718,000
		4/17/2002	24,000J	42,000	42,000	<25,000	570,000	<25,000	94,000	706,000
		7/14/2002	12,000	48,000	48,000	4,600	120,000	410J	22,000	206,600
		10/15/2002	26,000	110,000	110,000	16,000	170,000	540J	66,000	388,000
		1/9/2003	12,000	65,000	65,000	4,100	75,000	<2,500	39,000	195,100
RW11	16.5-31.5	1/10/2002	<250	2,700	2,700	6,600	290J	56J	3,000	12,300
		4/17/2002	<50	100	100	880	<250	37J	1,700	2,680
		7/14/2002	320	5,900	5,900	3,600	68J	29J	2,000	11,820
		10/15/2002	<1	0.45J	1.1	39	1.5J	24	26	90.1
RW12	14-29	1/10/2002	250	7,200	7,200	9,300	<1,200	32J	1,300	18,050
		4/17/2002	59J	7,800	7,800	6,200	460J	<250	2,300	16,300
		7/14/2002	310	8,300	8,300	5,100	700J	40J	2,900	16,610
		10/15/2002	130J	5,800	5,800	8,800	660J	34J	1,500	16,100
		1/9/2003	390	5,600	5,600	7,900	220JB	<250	870	14,760
RW13	9-29	1/10/2002	0.62J	120	120	59	110	9.3	94	392.3
		4/17/2002	<25	110	110	<25	910	23J	120	1,140
		7/14/2002	<10	150	150	99	960	12	87	1,308
		10/15/2002	2.5J	130	130	94	270	14	81	589
		1/9/2003	2.1J	110	110	75	340	9.5	88	622.5
RW14	8-28	1/11/2002	430	3,000	3,000	4,900	2,100	29J	550	10,980
		4/17/2002	180	3,000	3,000	4,900	730	27J	310	9,120
		7/14/2002	480	1,500	1,500	2,300	680	14J	200	5,160
		10/15/2002	520	2,500	2,500	3,900	290	18J	180	7,390
		1/9/2003	210	930	930	950	130	<25	100	2,320

Table 7 (continued). COPC Concentrations at the Northeast Site
(reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[a]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[b]
FDEP MCL			**3**	**70**	**63**	**1**	**5**	**1**	**1,000**	
RW15	14.5-29.5	1/11/2002	2,700	2,300	2,338	990	29J	5.9J	14J	6,028
		4/17/2002	1,800	1,300	1,300	590	<120	<25	<25	3,690
		7/14/2002	1,600	1,200	1,200	220	<120	9.8J	140	3,160
		10/15/2002	1,900	1,500	1,500	1,400	<120	8.2J	<25	4,800
		1/9/2003	2,500	1,400	1,400	210	<250	<50	<50	4,110
RW16	20-30	1/10/2002	<50	680	680	1,600	<250	<50	<50	2,280
		4/17/2002	<50	27J	27J	1,200	<250	<50	<50	1,200
		7/14/2002	<50	790	790	1,800	<250	8.6J	<50	2,590
		10/15/2002	<50	810	810	2,200	93J	8.8J	<50	3,010
		1/9/2003	<50	330	330	2,900	<250	<50	<50	3,230
RW17	19.5-29.5	1/10/2002	<1,000	61,000	61,000	27,000	<5,000	<1,000	1,700	89,700
		4/17/2002	<1	110	110	51	<5	<1	3.4	164.4
		7/14/2002	<1,000	72,000	72,000	22,000	<5,000	<1,000	2,000	96,000
		10/15/2002	<1,000	64,000	64,000	28,000	1,200JB	<1,000	1,500	93,500
		1/9/2003	<2,500	58,000	58,000	15,000	<12,000	<2,500	<2,500	73,000

[a]Total 1,2-DCE is the sum of cis-1,2-DCE and trans-1,2-DCE.
[b]Total COPC is the sum of the individual COPC concentrations. The cis-1,2-DCE value is not part of the Total COPC value because this value is included in the Total 1,2-DCE value. "J" values are not included in the Total COPC value.

ND = Not detected
J = Estimated value, result is between the reporting limit and the method detection limit.
B = Analyte also found in method blank.

Table 8. RCRA Metals in Samples Collected at the STAR Center
(reported in milligrams per liter)

Location	Screen Depth (ft bls)	Date Sampled	Arsenic	Chromium
PIN06			**Old Drum Storage Site**	
0500	3-13	1/13/2003	0.02	--
0501	3-13	1/14/2003	0.01	--
PIN09			**Incinerator Site**	
0500	3-13	1/13/2003	0.012	--
PIN12			**Industrial Drain Leaks Bldg 100**	
0513	15-25	1/8/2003	0.0043J	--
0514	30-40	1/9/2003	<0.01	--
0524	27-37	1/11/2003	<0.01	--
0525	12-22	1/11/2003	0.035	--
0526	19.5-29.5	1/9/2003	<0.01	--
S30B	5-15	1/10/2003	0.0086J	--
S31B	5-15	1/10/2003	0.034	--
S32B	5.5-15.5	1/10/2003	0.04	--
S33C	11-21	1/10/2003	0.011	--
S35B	5-15	1/10/2003	0.017	--
S37B	5-15	1/10/2003	0.0093J	--
S56B	10-19.8	1/9/2003	<0.01	--
S59B	10-19.8	1/9/2003	<0.01	--
S67B	10-19.83	1/8/2003	<0.01	--
S67C	20-29.83	1/8/2003	0.0038J	--
S67D	30-39.83	1/8/2003	0.0035J	--
S68B	10-20	1/14/2003	0.11	--
S68C	18-28	1/14/2003	<0.01	--
S68D	30-40	1/14/2003	<0.01	--
S69B	10-20	1/13/2003	0.005J	--
S69C	20-30	1/13/2003	<0.01	--
S69D	30-40	1/13/2003	<0.01	--
S70B	10-20	1/13/2003	<0.01	--
S70C	20-30	1/13/2003	<0.01	--
S70D	30-40	1/13/2003	<0.01	--
S71B	10-20	1/13/2003	<0.01	--
S71C	20-30	1/13/2003	0.0042J	--
S71D	30-40	1/13/2003	<0.01	--
S72B	10-20	1/11/2003	0.0049J	--
S72C	20-30	1/11/2003	<0.01	--
S72D	30-40	1/11/2003	<0.01	--
S73B	10-20	1/10/2003	0.0099J	--
S73C	20-30	1/9/2003	<0.01	--
S73D	30-40	1/10/2003	<0.01	--
PIN15			**Northeast Site**	
0515	7.6-17.6	1/10/2003	<0.01	--
0530	5-14.5	1/10/2003	0.0068J	--

Table 8 (continued). RCRA Metals in Samples Collected at the STAR Center (reported in milligrams per liter)

Location	Screen Depth (ft bls)	Date Sampled	Arsenic	Chromium
0535	20.5-30	1/10/2003	0.0045J	--
0536	17.5-27	1/10/2003	<0.01	--
0537	17.5-30	1/9/2003	<0.01	--
0538	19.5-29	1/9/2003	<0.01	--
0559	22-31.5	1/10/2003	<0.01	--
M17S	5-14.5	1/10/2003	<0.01	--
M27D	21-31	1/10/2003	<0.01	--
M27S	6-16	1/10/2003	<0.01	--
M29D	20-30	1/9/2003	<0.01	--
M29S	5-15	1/9/2003	0.0093J	--
M31D	19.5-29.5	1/9/2003	<0.01	--
M31S	4.5-14.5	1/9/2003	<0.01	--
M32D	14-24	1/9/2003	<0.01	--
M32S	3-13	1/9/2003	0.016	--
M35D	20-30	1/9/2003	0.045	--
PIN18			**Wastewater Neutralization Area**	
0500	11-16	1/13/2003	0.11	0.0024J
0501	11-16	1/13/2003	0.38	<0.01
0502	11-16	1/13/2003	0.058	<0.01
0514	32.5-42.5	1/11/2003	--	0.025
0515	22.5-32.5	1/11/2003	--	0.011
0516	12.5-22	1/11/2003	--	0.0046J
0521	20-30	1/13/2003	0.014	<0.01
0522	5-15	1/13/2003	0.016	<0.01
0523	32.5-42.5	1/13/2003	<0.01	0.0078J
0524	20-30	1/13/2003	0.13	<0.01
0525	5-15	1/13/2003	0.065	<0.01
RW02	10-20	1/13/2003	0.082	--
RW03	9-24	1/13/2003	0.061	--
PIN21			**Perimeter Monitor Wells**	
0502	7-17	1/10/2003	<0.01	--
0503	20-28	1/10/2003	<0.01	--
0504	7-17	1/14/2003	0.0068J	--
0505	20-28	1/14/2003	<0.01	--
0512	20-29.5	1/11/2003	0.0035J	--

J = Estimated value, result is between the reporting limit and the method detection limit.
-- Not Measured

Table 9. COPC Concentrations at the Building 100 Area
(reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
PIN06			**Old Drum Storage Site**						
0500	3-13	1/16/2002	0.17J	1.1	<1	1.1	<1	<1	1.1
		4/12/2002	0.13J	0.32J	<1	0.32J	<1	<1	ND
		7/16/2002	<1	0.74J	<1	0.74J	<1	<1	ND
0501	3-13	1/16/2002	<1	0.2J	<1	0.2J	<1	<1	ND
		4/12/2002	<1	<1	<1	ND	<1	<1	ND
		7/17/2002	<1	<1	<1	ND	<1	<1	ND
PIN09			**Incinerator Site**						
0500	3-13	1/15/2002	0.25J	0.24J	<1	0.24J	<1	<1	ND
		4/12/2002	<1	<1	<1	ND	<1	<1	ND
		7/16/2002	<1	<1	<1	ND	<1	0.23J	ND
PIN10			**Incinerator Ditch**						
0500	3-13	1/14/2002	0.8J	0.64J	<1	0.64J	<1	<1	ND
		4/12/2002	0.33J	0.61J	<1	0.61J	<1	<1	ND
		7/17/2002	0.33J	0.42J	<1	0.42J	<1	<1	ND
PIN12			**Industrial Drain Leaks Bldg 100**						
0508	3-13	1/16/2002	<1	<1	<1	ND	<1	<1	ND
		4/17/2002	<1	<1	<1	ND	<1	<1	ND
		7/17/2002	<1	0.67J	<1	0.67J	<1	<1	ND
0509	3-13	1/16/2002	44	<1	<1	ND	<1	<1	44
		4/17/2002	<1	<1	<1	ND	<1	<1	ND
		7/17/2002	<1	6	<1	6	<1	3.5	9.5
0510	3-13	1/16/2002	0.22J	0.17J	<1	0.17J	<1	2	2
		4/11/2002	<1	<1	<1	ND	<1	<1	ND
		7/17/2002	<1	<1	<1	ND	<1	0.32J	ND
0511	3-13	1/15/2002	<1	<1	<1	ND	<1	<1	ND
		4/15/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	<1	<1	ND	<1	<1	ND
0512	3-13	1/16/2002	<1	<1	<1	ND	<1	<1	ND
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	<1	<1	ND	<1	<1	ND
0513	15-25	1/9/2002	<1	19	1.9	20.9	0.47J	40	60.9
		4/11/2002	<1	31	2.1	33.1	0.58J	23	56.1
		7/13/2002	<1	16	2	18	0.39J	38	56
		10/14/2002	0.27J	22	2.2	24.2	<1	48	72.2
		1/8/2003	<1	24	1.2	25.2	<1	46	71.2

Table 9 (continued). RCRA Metals in Samples Collected at the STAR Center (reported in milligrams per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
0514	30-40	1/9/2002	<1	61	75	136	0.77J	120	256
		4/11/2002	<2.5	99	130	229	1.2J	97	326
		7/13/2002	<1	58	70	128	0.68J	100	228
		10/14/2002	0.15J	64	63	127	<1	120	247
		1/9/2003	<2.5	45	54	99	<2.5	72	171
0515	15-25	1/15/2002	<1	<1	<1	ND	<1	<1	ND
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	<1	<1	ND	<1	<1	ND
0516	30-40	1/15/2002	<1	<1	<1	ND	<1	3.1	3.1
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	<1	<1	ND	<1	<1	ND
0517	15-25	1/16/2002	<1	<1	<1	ND	<1	<1	ND
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	<1	<1	ND	<1	<1	ND
		10/12/2002	<1	<1	<1	ND	<1	<1	ND
0518	30-40	1/16/2002	<1	<1	<1	ND	<1	<1	ND
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	<1	<1	ND	<1	0.56J	ND
		10/12/2002	<1	<1	<1	ND	<1	0.95J	ND
0520	36-46	1/16/2002	<5	270	<5	270	<5	110	380
		4/12/2002	<5	360	<5	360	1.2J	100	460
		7/16/2002	<2.5	200	<2.5	200	<2.5	78	278
0521	19.5-29.5	1/16/2002	1.4	1.5	<1	1.5	<1	<1	2.9
		4/12/2002	0.4J	0.82J	<1	0.82J	<1	<1	ND
		7/16/2002	1.2	3.6	0.22J	3.6	<1	1.4	6.2
0522	32-42	1/14/2002	0.79J	<1	<1	ND	<1	<1	ND
		4/12/2002	<1	<1	<1	ND	<1	<1	ND
		7/17/2002	<1	<1	<1	ND	<1	<1	ND
0523	18-28	1/14/2002	0.55J	1.1	<1	1.1	<1	<1	1.1
		4/12/2002	0.15J	1.1	<1	1.1	<1	0.49J	1.1
		7/17/2002	0.22J	1	<1	1	<1	0.42J	1
		10/10/2002	0.2J	1	<1	1	<1	0.31J	1
0524	27-37	1/15/2002	<10	670	8.2	678.2	25	320	1,023.2
		4/13/2002	<10	1,800	110	1,910	430	490	2,830
		7/13/2002	<100	4,700	52J	4,700	230	680	5,610
		10/12/2002	<10	360	4.8J	360	24	43	427
		1/11/2003	<250	8,200	120J	8,200	280	530	9,010

Table 9 (continued). RCRA Metals in Samples Collected at the STAR Center (reported in milligrams per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
0525	12-22	1/15/2002	<1	2.5	<1	2.5	<1	<1	2.5
		4/13/2002	<1	2.2	<1	2.2	<1	<1	2.2
		7/13/2002	<1	2.5	<1	2.5	<1	0.25J	2.5
		10/12/2002	<1	2.6	<1	2.6	<1	0.34J	2.6
		1/11/2003	<1	2.4	<1	2.4	<1	<1	2.4
0526	19.5-29.5	1/16/2002	<1	13	7.9	20.9	<1	8.1	29
		4/13/2002	<1	14	4.8	18.8	<1	3.4	22.2
		7/13/2002	<1	6.8	4.4	11.2	<1	4	15.2
		10/12/2002	<1	3.5	2.1	5.6	<1	1.8	7.4
		1/9/2003	<1	3.1	1.7	4.8	<1	1.1	5.9
0527	118-137.6	4/15/2002	<1	<1	<1	ND	<1	<1	ND
0528	121-141	4/15/2002	<1	<1	<1	ND	<1	<1	ND
RW01	19-29	1/14/2002	9,600	5,200	27J	5,200	24J	1,100	15,900
		4/11/2002	9,000	7,200	<250	7,200	<250	400	16,600
		7/15/2002	8,100	4,100	40J	4,100	38J	930	13,130
RW02	25-35	1/14/2002	890	800	50	850	7.8J	97	1,837
		4/11/2002	750	840	55	895	18	67	1,730
		7/15/2002	820	600	57	657	18J	66	1,543
S29C	14-24	1/11/2002	<1	1.1	7.7	8.8	<1	120	128.8
		4/16/2002	<2.5	0.32J	3.6	3.6	<2.5	100	103.6
		7/12/2002	<1	<1	3.9	3.9	<1	6.9	10.8
S30B	5-15	1/11/2002	11,000	9,400	240J	9,400	<250	<250	20,400
		4/16/2002	3,800	10,000	150J	10,000	<250	<250	13,800
		7/12/2002	23,000	22,000	1,000	23,000	<250	<250	46,000
S31B	5-15	1/11/2002	1.1	1.3	<1	1.3	<1	<1	2.4
		4/16/2002	0.27J	0.85J	<1	0.85J	<1	<1	ND
		7/12/2002	<1	0.83J	<1	0.83J	<1	<1	ND
S32B	5.5-15.5	1/11/2002	0.36J	16	2.2	18.2	4	9.8	32
		4/16/2002	<1	18	1	19	2.6	5	26.6
		7/12/2002	<1	15	1.8	16.8	5.2	7.7	29.7
S33C	11-21	1/11/2002	7.5J	340	22	362	8.5J	580	942
		4/16/2002	1.8J	230	6.6	236.6	3.5J	520	756.6
		7/13/2002	<10	110	2.3J	110	<10	280	390
S35B	5-15	1/11/2002	44,000	76,000	9,500	85,500	320J	19,000	148,500
		4/15/2002	47,000	110,000	7,800	117,800	<2,500	11,000	175,800
		7/12/2002	36,000	100,000	5,500	105,500	<2,500	6,600	148,100
S36B	5-15	1/11/2002	<1	<1	<1	ND	<1	<1	ND
		4/16/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	<1	<1	ND	<1	<1	ND

Table 9 (continued). RCRA Metals in Samples Collected at the STAR Center (reported in milligrams per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
S37B	5-15	1/11/2002	0.43J	53	1.2	54.2	<1	46	100.2
		4/16/2002	<5	220	1.2J	220	<5	160	380
		7/12/2002	<10	230	<10	230	<10	45	275
S54D	36-41	1/12/2002	15,000	42,000	250J	42,000	420J	<500	57,000
		4/15/2002	9,900	43,000	<1,000	43,000	<1,000	<1,000	52,900
		7/12/2002	15,000	43,000	77J	43,000	190J	2,000	60,000
S55B	10-19.8	1/12/2002	<50	820	<50	820	<50	5,100	5,920
		4/15/2002	<100	1,800	<100	1,800	<100	11,000	12,800
		7/11/2002	<250	1,800	<250	1,800	<250	8,300	10,100
S55C	20.5-30.3	1/12/2002	<100	6,600	53J	6,600	<100	2,600	9,200
		4/15/2002	<100	9,400	16J	9,400	<100	3,000	12,400
		7/11/2002	<100	1,600	<100	1,600	<100	53J	1,600
S56B	10-19.8	1/12/2002	<1	<1	<1	ND	<1	<1	ND
		4/15/2002	<1	<1	<1	ND	<1	<1	ND
		7/12/2002	<1	<1	<1	ND	<1	<1	ND
S56C	20.5-30.3	1/12/2002	<1	<1	<1	ND	<1	<1	ND
		4/15/2002	<1	<1	<1	ND	<1	<1	ND
		7/12/2002	<1	<1	<1	ND	<1	<1	ND
S56D	31-40.8	1/12/2002	1.3	5.2	0.25J	5.2	<1	1.4	7.9
		4/15/2002	<1	<1	<1	ND	<1	<1	ND
		7/12/2002	<1	<1	<1	ND	<1	<1	ND
S57B	10-19.8	1/12/2002	27	23	<1	23	1.6	10	61.6
		4/15/2002	<1	<1	<1	ND	<1	<1	ND
		7/11/2002	<1	<1	<1	ND	<1	<1	ND
S57C	20.5-30.3	1/12/2002	850J	26,000	460J	26,000	1,300	41,000	68,300
		4/15/2002	21,000	23,000	<1,000	23,000	370J	16,000	60,000
		7/11/2002	31,000	24,000	<1,000	24,000	670J	<1,000	55,000
S57D	31.5-41.3	1/12/2002	3J	100	1.6J	100	5.8	160	265.8
		4/15/2002	7.6	240	1.1J	240	3.5J	580	827.6
		7/11/2002	5.4	190	0.82J	190	4.5	280	479.9
S59B	10-19.8	1/10/2002	<1	0.44J	<1	0.44J	<1	<1	ND
		4/12/2002	<1	0.5J	<1	0.5J	<1	3.7	3.7
		7/11/2002	<1	0.45J	<1	0.45J	<1	<1	ND
S59C	20.5-30.3	1/10/2002	<1	7.4	<1	7.4	<1	12	19.4
		4/12/2002	<1	5.8	<1	5.8	<1	5.4	11.2
		7/11/2002	<1	9.3	<1	9.3	<1	1.2	10.5
S59D	31-40.8	1/10/2002	<1	<1	<1	ND	<1	<1	ND
		4/12/2002	<1	<1	<1	ND	<1	<1	ND
		7/11/2002	<1	<1	<1	ND	<1	<1	ND

Table 9 (continued). RCRA Metals in Samples Collected at the STAR Center (reported in milligrams per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
S60B	10-19.8	1/10/2002	<1	3.4	<1	3.4	0.54J	<1	3.4
		4/12/2002	<1	5.9	<1	5.9	0.63J	<1	5.9
		7/11/2002	<1	5.8	<1	5.8	0.65J	0.56J	5.8
S60C	20.5-30.3	1/10/2002	<1	<1	<1	ND	<1	<1	ND
		4/12/2002	<1	<1	<1	ND	<1	<1	ND
		7/11/2002	<1	<1	<1	ND	<1	<1	ND
S60D	31-40.8	1/10/2002	<1	<1	<1	ND	<1	<1	ND
		4/12/2002	<1	<1	<1	ND	<1	<1	ND
		7/11/2002	<1	3.8	<1	3.8	0.23J	<1	3.8
S67B	10-19.83	1/10/2002	<10	51	6.1J	51	0.34J	470	521
		4/12/2002	<10	41	1.9J	41	<10	550	591
		7/15/2002	<10	49	5.5J	49	<10	540	589
		1/8/2003	<10	35	2.6J	35	<10	490	525
S67C	20-29.83	1/10/2002	<10	270	47	317	<10	550	867
		4/12/2002	<10	440	64	504	1.4J	240	744
		7/15/2002	<10	600	110	710	5.5J	280	990
		1/8/2003	<10	570	110	680	4.1J	300	980
S67D	30-39.83	1/10/2002	0.13J	110	27	137	1.4	57	195.4
		4/12/2002	<2.5	100	<2.5	100	<2.5	69	169
		7/15/2002	0.26J	69	28	97	0.82J	75	172
		1/8/2003	<2.5	130	27	157	1J	110	267
S68B	10-20	4/11/2002	<1	<1	<1	ND	<1	<1	ND
		7/16/2002	<1	0.12J	<1	0.12J	<1	<1	ND
		10/12/2002	<1	0.18J	<1	0.18J	<1	<1	ND
		1/14/2003	<1	<1	<1	ND	<1	<1	ND
S68C	18-28	4/11/2002	<1	1.6	<1	1.6	<1	1.7	3.3
		7/16/2002	<1	1	<1	1	<1	1	2
		10/12/2002	<1	1.6	<1	1.6	<1	2.1	3.7
		1/14/2003	<1	4.8	<1	4.8	<1	4.4	9.2
S68D	30-40	4/11/2002	<1	50	<1	50	<1	62	112
		7/16/2002	<1	49	0.27J	49	<1	42	91
		10/14/2002	<1	63	0.31J	63	<1	68	131
		1/14/2003	<1	40	<1	40	<1	30	70
S69B	10-20	4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/14/2002	<1	<1	<1	ND	<1	<1	ND
		10/14/2002	<1	0.28J	<1	0.28J	<1	<1	ND
		1/13/2003	<1	0.14J	<1	0.14J	<1	<1	ND

Table 9 (continued). RCRA Metals in Samples Collected at the STAR Center (reported in milligrams per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
S69C	20-30	4/10/2002	<1	1.1	<1	1.1	<1	<1	1.1
		7/14/2002	<1	<1	<1	ND	<1	<1	ND
		10/14/2002	<1	0.3J	0.2J	0.5J	<1	0.4J	ND
		1/13/2003	<1	0.2J	<1	0.2J	<1	0.64J	ND
S69D	30-40	4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/14/2002	<1	<1	<1	ND	<1	<1	ND
		10/14/2002	<1	0.65J	<1	0.65J	<1	<1	ND
		1/13/2003	<1	0.49J	<1	0.49J	<1	<1	ND
S70B	10-20	4/10/2002	<1	30	0.36J	30	<1	16	46
		7/14/2002	<1	28	0.3J	28	<1	20	48
		10/15/2002	<1	32	0.68J	32	<1	31	63
		1/13/2003	<1	28	0.28J	28	<1	19	47
S70C	20-30	4/10/2002	<1	26	5.4	31.4	<1	6	37.4
		7/14/2002	<1	22	6.4	28.4	<1	6.1	34.5
		10/15/2002	<1	25	11	36	0.96J	11	47
		1/13/2003	<1	29	9.5	38.5	0.66J	6.7	45.2
S70D	30-40	4/10/2002	<1	7	1.2	8.2	<1	1.2	9.4
		7/14/2002	<1	7.8	2.1	9.9	<1	1.1	11
		10/15/2002	<1	9.3	3.8	13.1	0.19J	1.9	15
		1/13/2003	<1	10	3.4	13.4	<1	1.7	15.1
S71B	10-20	4/11/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	0.5J	<1	0.5J	<1	<1	ND
		10/15/2002	<1	2.4	1.2	3.6	<1	0.29J	3.6
		1/13/2003	<1	7	2.8	9.8	<1	1.2	11
S71C	20-30	4/11/2002	<1	55	17	72	0.45J	28	100
		7/13/2002	<1	120	69	189	0.23J	42	231
		10/15/2002	<2.5	75	50	125	0.86J	65	190
		1/13/2003	<1	110	65	175	1.5	82	258.5
S71D	30-40	4/11/2002	<1	0.93J	<1	0.93J	<1	<1	ND
		7/13/2002	<1	1.6	<1	1.6	<1	<1	1.6
		10/15/2002	<1	3	0.59J	3	<1	0.71J	3
		1/13/2003	<1	2.3	0.23J	2.3	<1	0.35J	2.3
S72B	10-20	4/9/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	<1	<1	ND	<1	<1	ND
		10/11/2002	<1	<1	<1	ND	<1	<1	ND
		1/11/2003	<1	<1	<1	ND	<1	<1	ND
S72C	20-30	4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	0.15J	<1	0.15J	<1	<1	ND
		10/14/2002	<1	0.22J	<1	0.22J	<1	<1	ND
		1/11/2003	<1	46	0.48J	46	2.7	5.6	54.3

Table 9 (continued). RCRA Metals in Samples Collected at the STAR Center (reported in milligrams per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
S72D	30-40	4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	<1	<1	ND	<1	<1	ND
		10/14/2002	<1	<1	<1	ND	<1	<1	ND
		1/11/2003	<1	1.9	<1	1.9	<1	1.7	3.6
S73B	10-20	4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	<1	<1	ND	<1	<1	ND
		10/14/2002	<1	<1	<1	ND	<1	<1	ND
		1/10/2003	<1	<1	<1	ND	<1	<1	ND
S73C	20-30	4/10/2002	<1	46	18	64	<1	29	93
		7/15/2002	<1	43	18	61	0.83J	34	95
		10/14/2002	<1	37	18	55	0.63J	33	88
		1/9/2003	<1	61	32	93	0.69J	35	128
S73D	30-40	4/10/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	0.6J	0.15J	0.75J	<1	0.24J	ND
		10/14/2002	<1	1.1	0.42J	1.1	<1	0.32J	1.1
		1/10/2003	<1	<1	<1	ND	<1	<1	ND
TE03	-	1/16/2002	<1	<1	<1	ND	<1	<1	ND
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/13/2002	<1	0.14J	<1	0.14J	<1	5.6	5.6
PIN21			**Perimeter Monitor Wells**						
0500	7-17	1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/9/2002	<1	<1	<1	ND	<1	<1	ND
		7/14/2002	<1	<1	<1	ND	<1	<1	ND
0501	20-28	1/9/2002	<1	1.8	0.14J	1.8	<1	<1	1.8
		4/9/2002	<1	1.5	<1	1.5	<1	<1	1.5
		7/14/2002	<1	1.1	<1	1.1	<1	<1	1.1
0502	7-17	1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	<1	<1	ND	<1	<1	ND
		10/12/2002	<1	<1	<1	ND	<1	<1	ND
		1/10/2003	<1	<1	<1	ND	<1	<1	ND
0503	20-28	1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/13/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	0.13J	<1	<1	ND	<1	<1	ND
		10/12/2002	<1	<1	<1	ND	<1	<1	ND
		1/10/2003	<1	<1	<1	ND	<1	<1	ND

Table 9 (continued). RCRA Metals in Samples Collected at the STAR Center (reported in milligrams per liter)

Location	Screen Depth (ft)	Date Sampled	TCE	cis-1,2-DCE	trans-1,2-DCE	Total 1,2-DCE[a]	1,1-DCE	Vinyl chloride	Total COPC[b]
FDEP MCL			**3**	**70**	**100**	**63**	**7**	**1**	
0504	7-17	1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/17/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	<1	<1	ND	<1	<1	ND
		10/16/2002	<1	<1	<1	ND	<1	<1	ND
		1/14/2003	<1	<1	<1	ND	<1	<1	ND
0505	20-28	1/9/2002	<1	<1	<1	ND	<1	<1	ND
		4/17/2002	<1	<1	<1	ND	<1	<1	ND
		7/15/2002	<1	<1	<1	ND	<1	0.21J	ND
		10/16/2002	<1	<1	<1	ND	<1	<1	ND
		1/14/2003	<1	<1	<1	ND	<1	<1	ND
0512	20-29.5	1/9/2002	<1	2.8	0.22J	2.8	<1	8.6	11.4
		4/16/2002	<1	2.7	<1	2.7	<1	3.7	6.4
		7/15/2002	<1	1.3	<1	1.3	<1	1.6	2.9
		10/15/2002	4	6.1	0.2J	6.1	<1	2.7	12.8
		1/11/2003	<1	0.76J	<1	0.76J	<1	<1	ND

[a]Total 1,2-DCE is the sum of cis-1,2-DCE and trans-1,2-DCE.
[b]Total COPC is the sum of the individual COPC concentrations. The cis-1,2-DCE and trans-1,2-DCE values are not part of the Total COPC value because these values are included in the Total 1,2-DCE value. "J" values are not included in the Total COPC value.

ND = Not detected
J = Estimated value, result is between the reporting limit and the method detection limit.
B = Analyte also found in method blank.

Table 10. COPC Concentrations at the Wastewater Neutralization Area (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	Vinyl chloride	Arsenic	Total COPC[a]
FDEP MCL			**1**	**50**	
PIN18			**Wastewater Neutralization Area**		
0500	11-16	1/15/2002	--	100	100
		4/16/2002	<1	92	92
		7/16/2002	--	97	97
		10/15/2002	--	110	110
		1/13/2003	--	110	110
0501	11-16	1/15/2002	--	540	540
		4/16/2002	<1	700	700
		7/16/2002	--	580	580
		10/10/2002	--	450	450
		1/13/2003	--	380	380
0502	11-16	1/15/2002	--	67	67
		4/16/2002	<1	60	60
		7/16/2002	--	74	74
		10/10/2002	--	66	66
		1/13/2003	--	58	58
0503	10-20	4/13/2002	<1	6.8J	ND
		10/11/2002	--	<10	ND
0504	13-22	4/16/2002	<1	<10	ND
		10/12/2002	--	4.6J	ND
		10/14/2002	--	<10	ND
0505	10.5-20.5	4/13/2002	<1	5.6J	ND
		10/15/2002	--	<10	ND
0506	12-22	4/13/2002	<1	4.1J	ND
		10/12/2002	--	<10	ND
0507	27-37	4/13/2002	<1	<10	ND
		10/11/2002	--	<10	ND
0508	31-41	4/16/2002	<1	<10	ND
		10/10/2002	--	<10	ND
0509	27.5-37.5	4/13/2002	<1	<10	ND
		10/12/2002	--	<10	ND
0510	27.5-37.5	4/13/2002	<1	3.7J	ND
		10/12/2002	--	3.8J	ND
0511	32-42	4/16/2002	<1	<10	ND
0512	21-31	4/16/2002	<1	<10	ND
0513	12-22	4/16/2002	<1	<10	ND
0514	32.5-42.5	4/13/2002	<1	4.7J	ND
0515	22.5-32.5	4/15/2002	<1	<10	ND
0516	12.5-22	4/15/2002	<1	4.2J	ND
0517	31.5-41.5	4/13/2002	<1	<10	ND
0518	22.5-32.5	4/13/2002	<1	3.8J	ND
0519	12.5-22.5	4/13/2002	6.7	4.2J	6.7
0520	32.5-42.5	4/15/2002	<1	<10	ND

Table 10 (continued). COPC Concentrations at the Wastewater Neutralization Area (reported in micrograms per liter)

Location	Screen Depth (ft)	Date Sampled	Vinyl chloride	Arsenic	Total COPC[a]
FDEP MCL			**1**	**50**	
0521	20-30	1/15/2002	--	3.5J	ND
		4/15/2002	<1	4.6J	ND
		7/16/2002	--	<10	ND
		10/10/2002	--	<10	ND
		1/13/2003	--	14	14
0522	5-15	1/14/2002	--	72	72
		4/15/2002	<1	74	74
		7/16/2002	--	37	37
		10/10/2002	--	23	23
		1/13/2003	--	16	16
0523	32.5-42.5	1/15/2002	--	<10	ND
		4/15/2002	<1	<10	ND
		7/16/2002	--	<10	ND
		10/10/2002	--	<10	ND
		1/13/2003	--	<10	ND
0524	20-30	1/15/2002	--	9.9J	ND
		4/15/2002	<1	22	22
		7/16/2002	--	20	20
		10/10/2002	--	22	22
		1/13/2003	--	130	130
0525	5-15	1/15/2002	--	50	50
		4/16/2002	<1	34	34
		7/16/2002	--	29	29
		10/10/2002	--	75	75
		1/13/2003	--	65	65
0526	19.5-29	4/16/2002	<1	<10	ND
RW02	10-20	1/10/2002	<1	110	110
		4/16/2002	<1	78	78
		7/15/2002	<1	98	98
		1/13/2003	<1	82	82
RW03	9-24	1/10/2002	<1	81	81
		4/15/2002	<1	49	49
		7/15/2002	<1	57	57
		1/13/2003	<1	61	61

[a]Total COPC is the sum of the individual COPC concentrations. "J" values are not included in the Total COPC value.

ND = Not detected
-- = Not measured
J = Estimated value, result is between the reporting limit and the method detection limit.
B = Analyte also found in method blank.

Table 11. Relative Percent Difference (RPD) for Duplicate Samples

Sample ID	Duplicate ID	Case Number	Constituent	S[a]	D[b]	RPD Value	5 times DL[c]	Fail[d]
PIN12−0526	PIN12−0580	B350124	Arsenic	0.005	0.0035	35.3	0.05	
			cis-1,2-Dichloroethene	3.1	2.9	6.7	5	
			trans-1,2-Dichloroethene	1.7	1.6	6.1	5	
			Vinyl chloride	1.1	0.92	17.8	5	
PIN12−S73C	PIN12−0581	B350124	1,1-Dichloroethene	0.69	0.55	22.6	5	
			cis-1,2-Dichloroethene	61	45	30.2	5	Fail
			trans-1,2-Dichloroethene	32	23	32.7	5	Fail
			Vinyl chloride	35	30	15.4	5	
PIN15−M27S	PIN15−0582	B350126	non-detect					
PIN18−0521	PIN18−0650	B350160	Arsenic	0.014	0.01	33.3	0.05	
			Chromium	ND	ND			

[a]S = Original sample (N001), VOC concentrations in μg/L and metals in mg/L.
[b]D = Duplicate sample (N002), VOC concentrations in μg/L and metals in mg/L.
[c]DL = Detected limit.
[d]Fail is an RPD greater than ±30% and original or duplicate result more than 5 times the detection limit.
ND = Not detected

Table 12. Summary of Analytical Results for Ground Water Samples Collected at the Northeast Site Treatment System
(*reported in micrograms per liter unless otherwise noted)*

Location	Date Sampled	TCE	cis-1,2-DCE	Total 1,2-DCE[a]	Vinyl chloride	Methylene chloride	Benzene	Toluene	Total COPC[b]	$CaCO_3$ mg/L	Fe mg/L
PIN15		Northeast Site									
INF1	1/2/2003	4,000	7,200	7,200	1,400	12,000	<250	2,600	27,200	480	6.1
INF1	1/22/2003	1,900	5,000	5,058	1,300	2,200	13J	660	11,118	510	4.8
INF1	2/4/2003	2,300	5,300	5,410	800	3,400	13J	1,000	12,910	460	4.6
INF1	2/18/2003	1,900	3,800	3,800	730	3,500	<100	750	10,680	450	4.2
INF1	3/4/2003	2,200	4,900	4,900	520	600	<100	370	8,590	480	5
INF1	3/20/2003	2,000	3,900	3,900	1,200	6,300B	<100	750	14,150	480	4.6
EFF1	1/2/2003	<1	<1	ND	<1	0.67J	<1	0.24J	ND	470	5.3
EFF1	1/22/2003	<1	<1	ND	1.2	0.61J	<1	0.15J	1.2	510	4.2
EFF1	2/4/2003	<1	<1	ND	<1	<5	<1	0.16J	ND	470	4.3
EFF1	2/18/2003	<1	0.18J	0.18J	<1	0.36J	<1	<1	ND	460	4.1
EFF1	3/4/2003	<1	<1	ND	<1	<5	<1	<1	ND	480	4.2
EFF1	3/20/2003	<1	<1	ND	<1	1.8JB	<1	<1	ND	500	17

[a]Total 1,2-DCE is the sum of cis-1,2-DCE and trans-1,2-DCE
[b]Total COPC is the sum of the individual COPC concentrations. The cis-1,2-DCE value is not part of the Total COPC value because this value is included in the Total 1,2-DCE value. "J" values are not included in the Total COPC value.
J Estimated value, result is between the reporting limit and the method detection limit.
ND = Not detected

Table 13. Estimated Mass of VOCs Recovered from the Northeast Site and Building 100 Recovery Wells During January, February, and March 2003

Month	Volume Treated (gallons)	Concentration[a]						
		cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	Toluene (µg/L)	TCE (µg/L)	Methylene Chloride (µg/L)	Vinyl Chloride (µg/L)	Total VOCs (µg/L)
January 2003	733,292	6,100	74	1,630	2,950	7,100	1,350	19,204
February 2003	668,277	4,550	70	875	2,100	3,450	765	11,810
March 2003	782,081	4,400	56	560	2,100	3,450	860	11,426

Month	Volume Treated (gallons)	Recovery[b]						
		cis-1,2-DCE (lbs)	trans-1,2-DCE (lbs)	Toluene (lbs)	TCE (lbs)	Methylene Chloride (lbs)	Vinyl Chloride (lbs)	Total VOCs (lbs)
January 2003	733,292	37.3	0.4	10.0	18.1	43.4	8.3	117.5
February 2003	668,277	25.4	0.4	4.9	11.7	19.2	4.3	65.9
March 2003	782,081	28.7	0.4	3.7	13.7	22.5	5.6	74.6

[a]These concentrations represent the average of weekly sampling results.
[b]Includes "J" (estimated) values. For any detection of "<", which indicates the laboratory could not detect that analyte, 50 percent of the "<" value was used for the calculation of recovery.

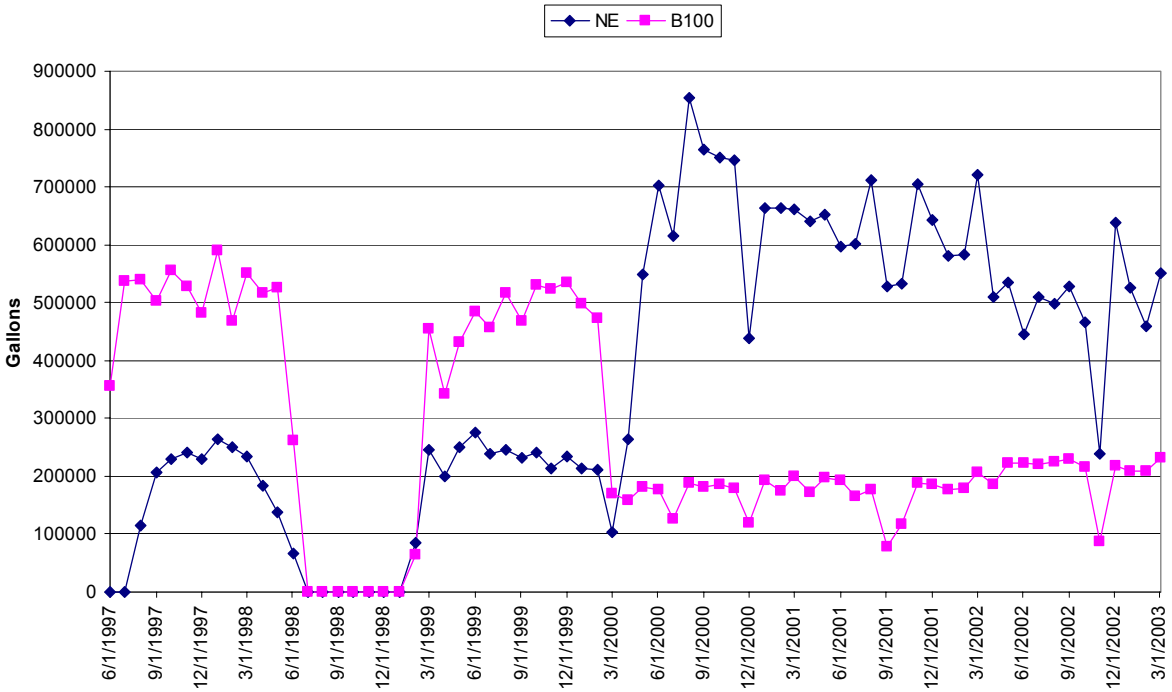


Chart 1. Historical Northeast Site and Building 100 Ground Water Recovery

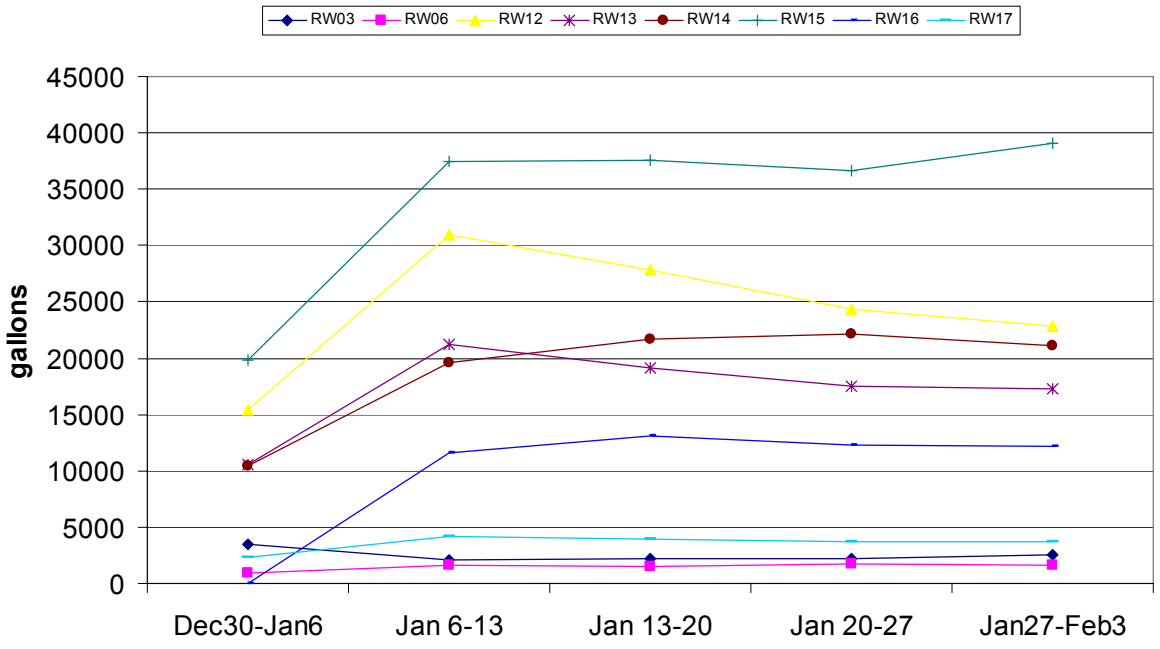


Chart 2. January 2003 Northeast Site (Individual Wells) Ground Water Recovery

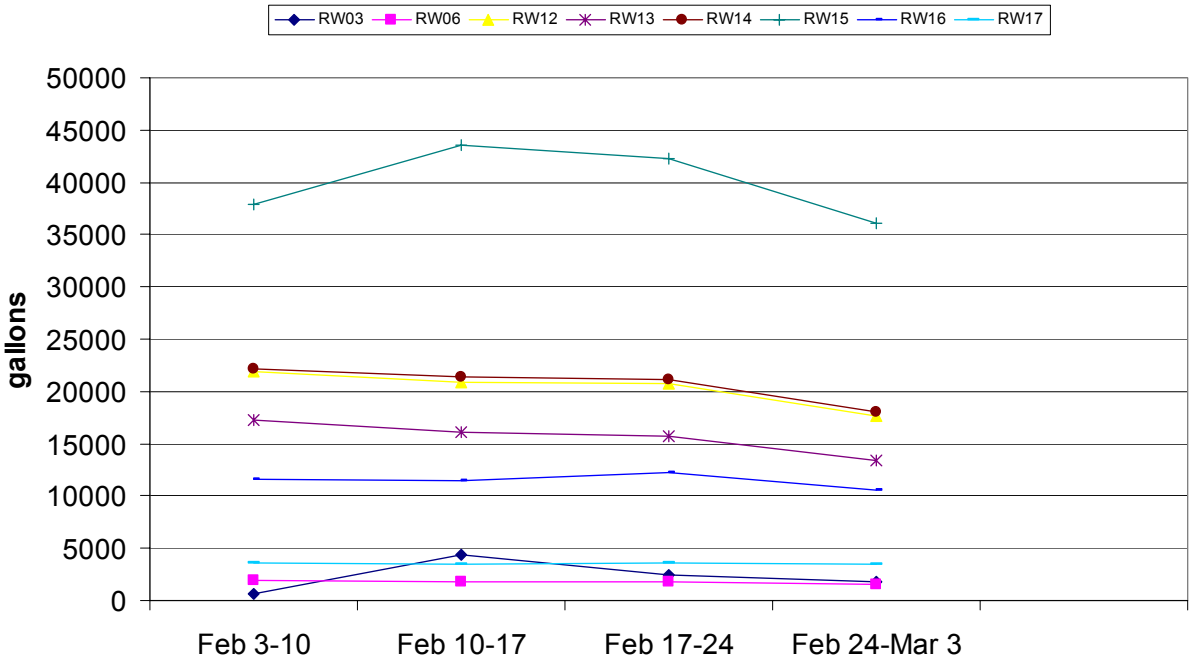


Chart 3. February 2003 Northeast Site (Individual Wells) Ground Water Recovery

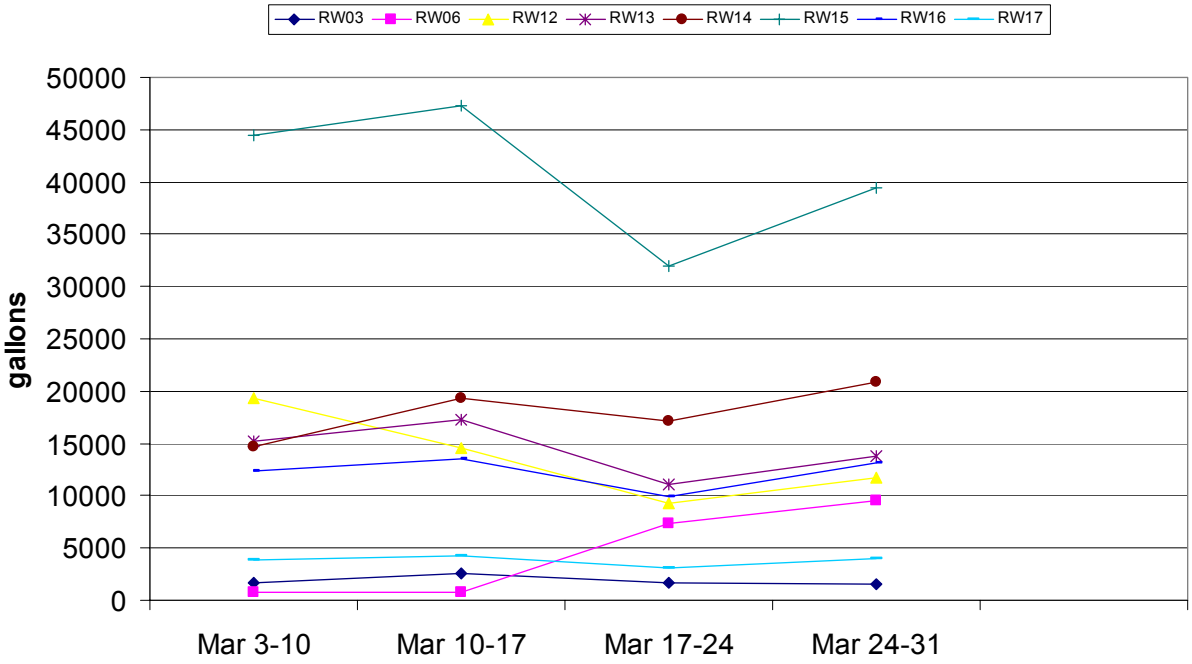


Chart 4. March 2003 Northeast Site (Individual Wells) Ground Water Recovery

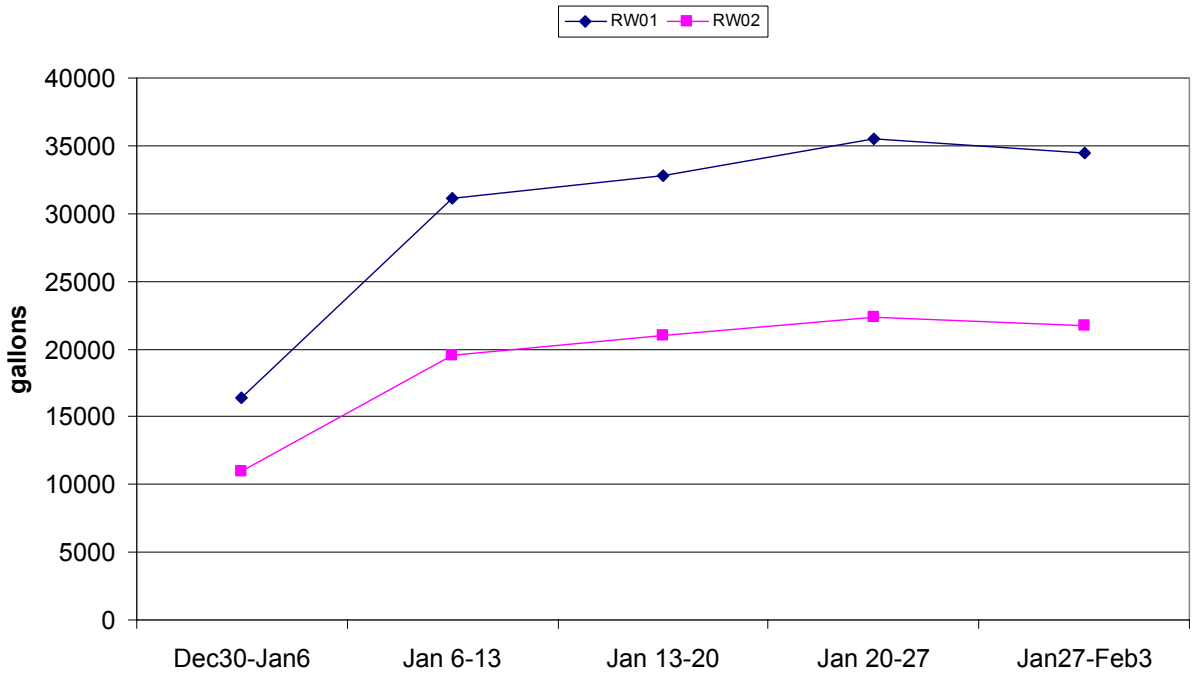


Chart 5. January 2003 Building 100 Ground Water Recovery

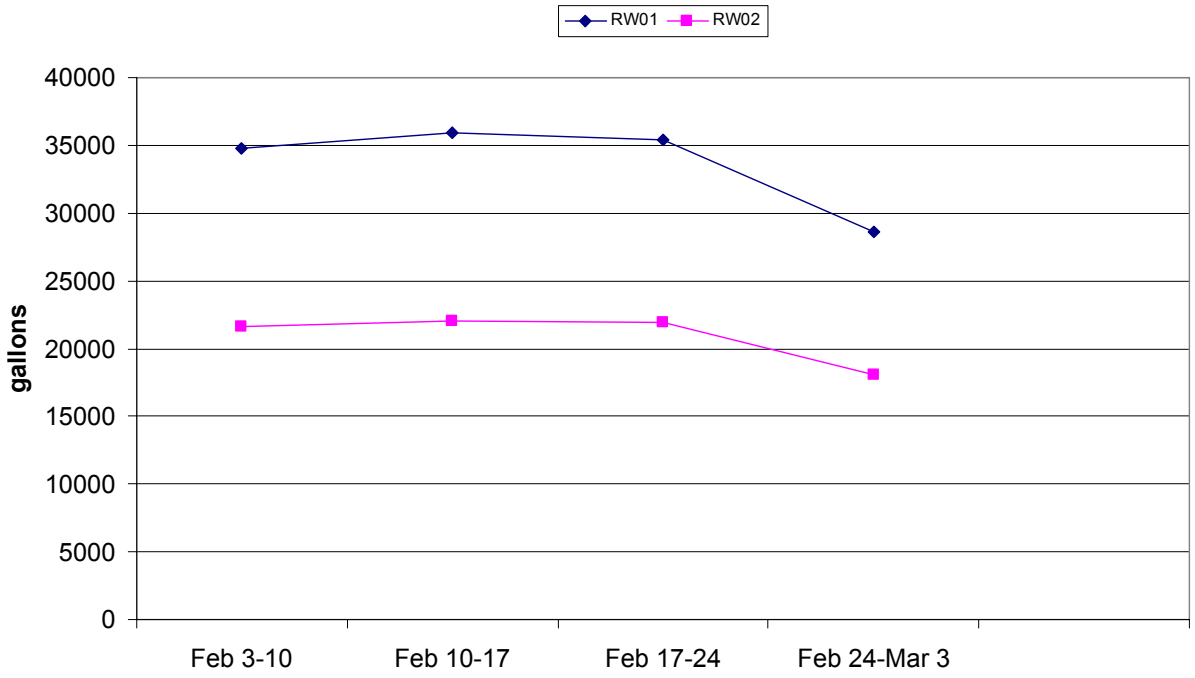


Chart 6. February 2003 Building 100 Ground Water Recovery

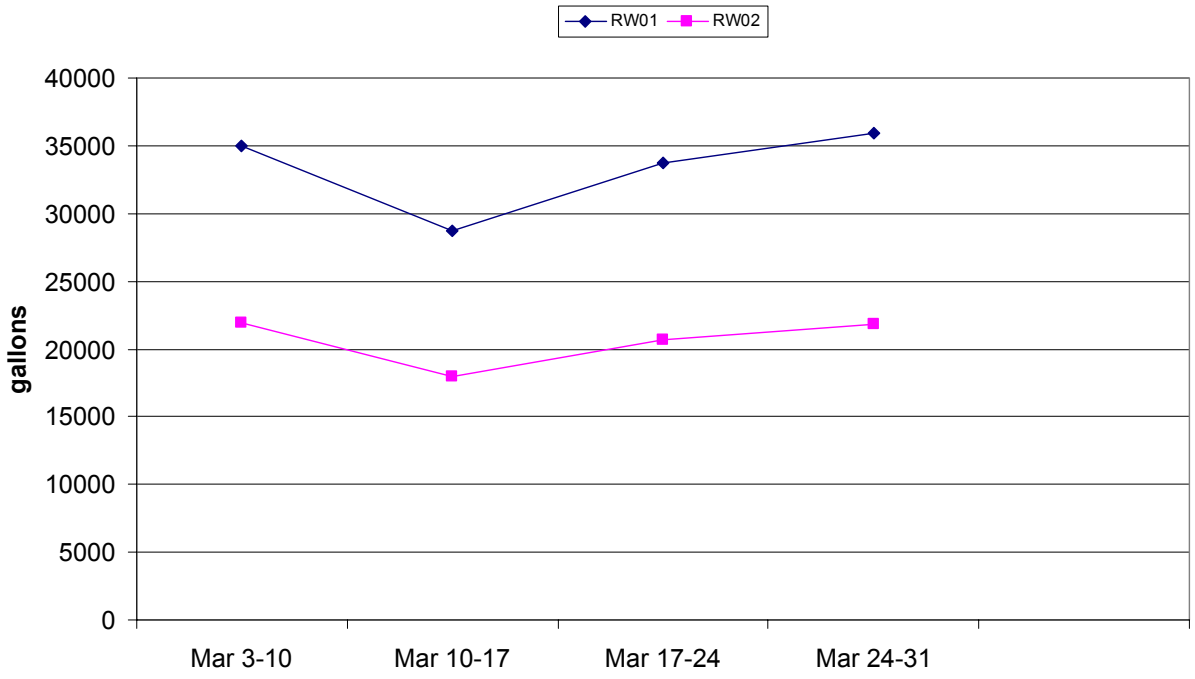


Chart 7. March 2003 Building 100 Ground Water Recovery

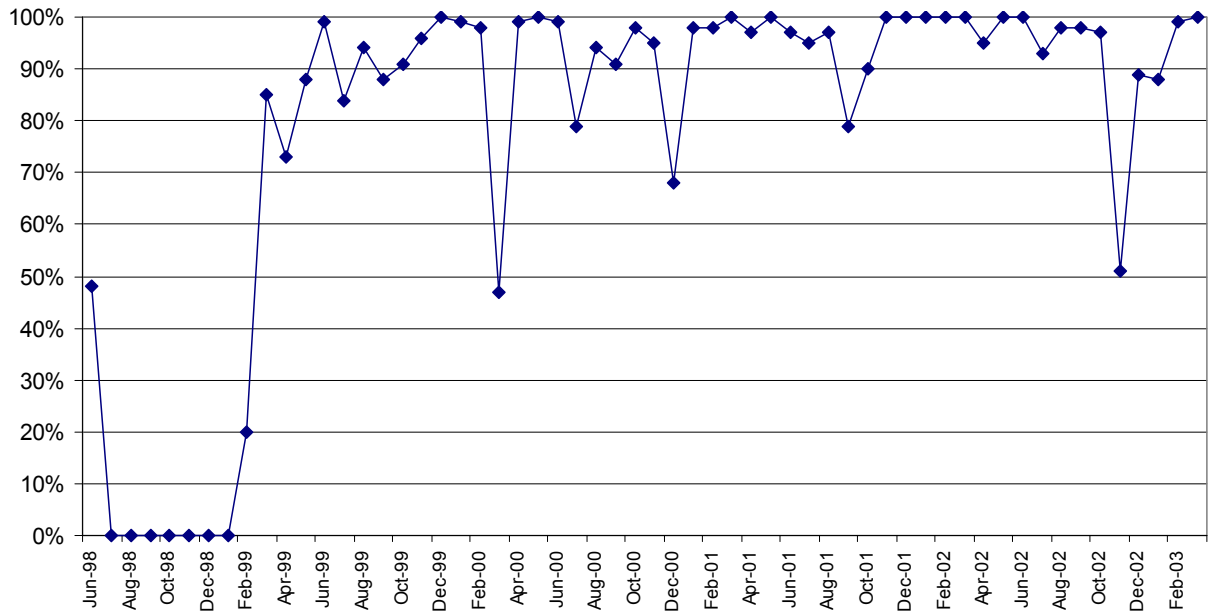


Chart 8. Historical Northeast Site Air Stripper—Percent Time On-Line

Appendix A

Laboratory Reports—January 2003 Quarterly Results

Appendix B

Laboratory Reports for
Northeast Site Treatment System—January to March 2003

Appendix C

Laboratory Reports for WWNA—January to March 2003

Appendix D

Northeast Site Treatment System Historical Data Table

Table D−1. Historical Summary of Ground Water Recovery at the Northeast Site and Building 100

Report Date	Quarterly (gallons)	Total To Date (gallons)
April–June 1997	356,886	356,886
July–September 1997	1,899,871	2,256,757
October–December 1997	2,265,460	4,522,217
January–March 1998	2,358,081	6,880,298
April–June 1998	1,693,697	8,573,995
July–September 1998	0	8,573,995
October–December 1998	0	8,573,995
January–March 1999	848,912	9,422,907
April–June 1999	1,985,705	11,408,612
July–September 1999	2,158,568	13,567,180
October–December 1999	2,285,471	15,852,651
January–March 2000	1,670,059	17,522,710
April–June 2000	2,031,821	19,554,531
July–September 2000	2,728,441	22,282,972
October–December 2000	2,416,705	24,699,677
January–March 2001	2,977,868	27,677,545
April–June 2001	2,452,063	30,129,608
July–September 2001	2,262,233	32,391,841
October–December 2001	2,374,065	34,765,906
January–March 2002	2,449,505	37,215,411
April–June 2002	2,119,164	39,334,575
July–September 2002	2,211,860	41,546,435
October−December 2002	1,830,987	43,377,422
January−March 2003	2,183,650	45,561,072

End of current text